

ENVIRONMENTAL
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**RESULTS OF
SUBSURFACE INVESTIGATION**

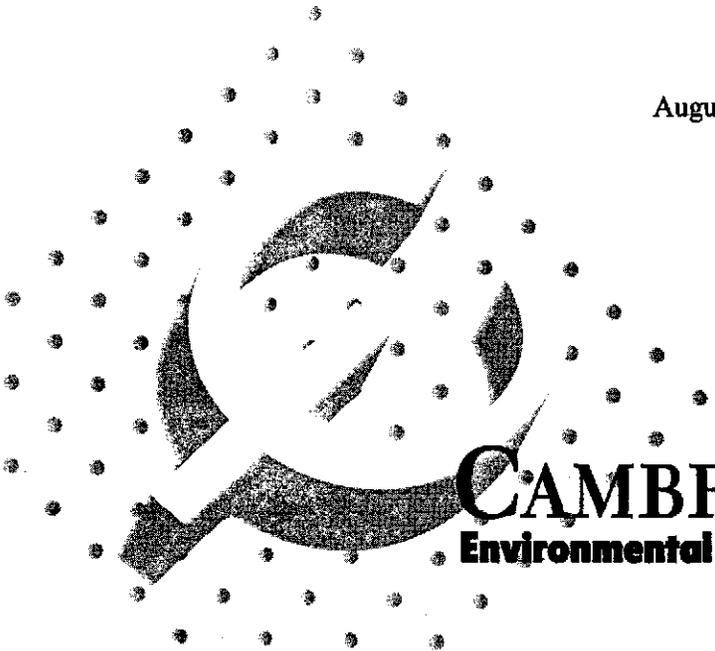
at:

**1432 Harrison Street,
Oakland, California**

prepared for:

**Alvin H. Bacharach and Barbara Jean Borsuk
c/o Mark Borsuk, Esq.
1626 Vallejo Street
San Francisco, CA 94123-5116**

August 10, 1995



**CAMBRIA
Environmental Technology, Inc.**

**RESULTS OF
SUBSURFACE INVESTIGATION**

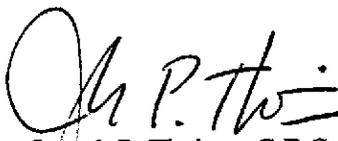
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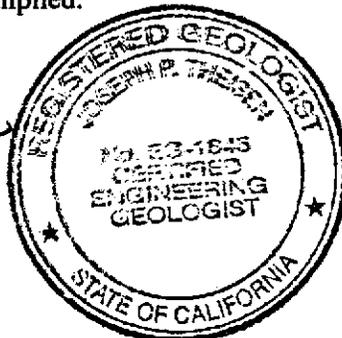
**1432 Harrison Street
Oakland, California**

prepared by:

Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, California 94608
Cambria Project # 54-188

All work performed by Cambria Environmental Technology, Inc. for the project at 1432 Harrison Street, Oakland, California was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate and satisfy the scope of work prescribed by the client for this project. The data, findings, recommendations, specifications or professional opinions presented herein were prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either express or implied.


Joseph P. Theisen, C.E.G.
Principal Hydrogeologist




David Elias
Project Geologist

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EXECUTIVE SUMMARY

This report presents the results of a subsurface investigation conducted by Cambria Environmental Technology, Inc. (*Cambria*) at 1432 Harrison Street in Oakland, California on July 6 and 7, 1995. The site is located in downtown Oakland in a mixed commercial and residential area (Figure 1).

The objective of our July 6 and 7, 1995, subsurface investigation was to assess the horizontal extent of hydrocarbons in soil and ground water near two previously removed 1,000-gallon gasoline underground storage tanks (USTs). To achieve this objective *Cambria* drilled twelve soil borings in the vicinity of the USTs and attempted to collect one "grab" ground water sample from each boring for laboratory analysis. A total of nine grab water samples were collected and analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, ethylbenzene, toluene and xylenes (BETX). Since ground water did not enter three of the soil borings, *Cambria* replaced the grab ground water sample with a soil sample collected at the ground water table from the three borings.

All of the grab ground water and soil samples contained hydrocarbons. Total petroleum hydrocarbons as gasoline (TPHg) up to 84,000 parts per billion (ppb) and benzene up to 9,600 ppb were detected in the grab water samples. TPHg up to 350,000 ppb and benzene up to 4,000 ppb were detected in soil samples collected from the borings that did not accumulate ground water.

Cambria selected the boring locations to define the extent of hydrocarbons in soil and ground water downgradient, upgradient and crossgradient of the former gasoline USTs. Since petroleum hydrocarbons were detected in soil and ground water samples collected from all borings, the horizontal extent of hydrocarbon contamination has not been defined at this time. Based on the field indications of hydrocarbons detected in soil samples collected more than 10 ft above the current ground water table elevation and the horizontal distribution of the detected hydrocarbons, the hydrocarbons in soil and ground water upgradient and crossgradient of the former gasoline USTs may originate from offsite sources.

Cambria recommends additional subsurface investigation and records research to define the horizontal extent of hydrocarbons in soil and ground water and to determine if offsite hydrocarbon sources are contributing hydrocarbons to the subject site.

INTRODUCTION

Objectives

This report presents the results of the subsurface investigation conducted in July 1995 by *Cambria* Environmental Technology (*Cambria*) at 1432 Harrison Street in Oakland, California. The objective of this investigation was to assess the vertical and lateral extent of hydrocarbons in soil and ground water released from previously removed underground storage tanks (USTs). To achieve this objective *Cambria* drilled twelve soil borings and collected and analyzed soil and ground water samples.

Site Background and Previous Investigations

Site Location: The site is located in a commercial/residential area in downtown Oakland, California, between Harrison Street and Alice Street. The nearest surface waters are the Oakland Inner Harbor, and Lake Merritt, located 14 blocks north and four blocks west of the subject site, respectively.

Adjacent Potential Hydrocarbon Sources: The subject site is located immediately downgradient of 1424 Harrison Street, where two USTs were closed in place (Figure 2). A Chevron service station located at 14th Street and Harrison Street, upgradient of the subject site, has had a confirmed gasoline release. Chevron is currently operating a soil and ground water remediation system.

November and December, 1994 Tank Removal: In November and December 1994, Levine Fricke of Emeryville, California removed four USTs from the site. Two, 1,000-gallon, single-walled, steel, gasoline USTs were located under the sidewalk on Harrison Street (Figure 2), with gasoline dispensers located about 20 ft east of the USTs. Two additional steel single-walled, waste oil USTs, each approximately 1,000-gallons in capacity, were located in the basement of the garage near Alice Street. In addition, three hydraulic lifts, one vault, and one sump, with the respective piping, were excavated and removed from the site. A total of approximately 240 cubic yards of hydrocarbon-impacted soils were removed from the three areas (Figure 2).

August 1994 Subsurface Investigation: In August 1994, Levine Fricke conducted a subsurface investigation to assess the extent of hydrocarbons in soil and groundwater. The investigation results indicated that soil and ground water were not significantly impacted by hydrocarbons near the Alice Street side of the site. No

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petroleum hydrocarbons were detected in the soil sample collected from MW-3, however, the ground water sample contained 300 ppb total petroleum hydrocarbons as oil (TPHo). In the vicinity of the former gasoline UST locations near Harrison Street, TPHg and BTEX were detected in ground water samples collected from the monitoring wells MW-1 and MW-2 and low concentrations of benzene and toluene were detected in a soil sample collected from MW-2.

Quarterly Ground Water Monitoring: Ground water samples have been collected from monitoring wells MW-1, MW-2 and MW-3 since January, 1994. Since the 4th quarter 1994, ground water fluctuated beneath the site from 17.86 to 19.15 ft depth. The ground water flow direction is generally towards the northeast. In a April 26, 1995 letter, Alameda County Department of Environmental Health gave permission to cease collecting ground water samples from MW-3 because only very low hydrocarbon concentrations had ever been detected in ground water samples.

INVESTIGATION PROCEDURES

The results of *Cambria's* July 6 and 7, 1995 subsurface investigation are summarized below. A copy of the soil boring permit is presented in Appendix A. Boring logs are presented in Appendix B. Analytic results for ground water and soil are presented in Tables 1 and 2, respectively, and the analytic reports are presented in Appendix C. *Cambria's* Standard Field Procedures describing our sampling methods are presented in Appendix D.

Cambria attempted to collect grab ground water samples from each of the 12 soil borings. However, ground water did not enter borings SB-F, SB-H, and SB-L. Therefore, we replaced the grab water samples with a soil sample collected at the water table for each of these borings. Figure 4 presents TPHg and benzene analytic results from the ground water samples collected and analyzed for this investigation. In addition, the figure presents 2nd quarter 1995 sampling analytic results for monitoring wells MW-1 and MW-2.

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Soil Borings

- Permits:** City of Oakland Excavation Permit X9500A10 and Alameda County Zone 7, Water Agency drilling permit 95461 were required for the soil borings (Attachment A).
- Drilling Dates:** July 6, and 7, 1995
- Drilling Methods:** Hand augured first five ft and Geoprobe cuttingless drilling rig using hydraulic push below 5 ft
- Number of Borings:** Twelve (Figure 2)
- Boring Depths:** 20 to 37 ft below grade (Appendix B)
- Sediment Lithology:** The site is primarily underlain by silty sands with small percentages of clay to the total depth explored of 37 ft (Appendix B).
- Waste Disposal:** Soil from hand auguring was stored on site in a 55 gallon drum pending disposal.

Ground Water Sampling

- Ground Water Analyses:** Nine grab ground water samples collected from the open borings were analyzed for:
- TPHg by modified EPA Method 8015,
 - BETX by EPA Method 8020.
- Ground Water Depth During Sampling:** Ground water stabilized in most borings at approximately 20 depth.

Soil Sampling

- Soil Analyses:** Since ground water did not enter borings SB-F, SB-H and SB-L, Cambria collected soil samples at the ground water table. These samples were analyzed for:
- Total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015, and
 - Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020.

INVESTIGATION RESULTS

Hydrocarbon Distribution in Ground Water

Both TPHg and benzene were detected in all of the grab ground water samples collected and analyzed at concentrations of up to 84,000 parts per billion (ppb) TPHg and 9,600 ppb benzene (Table 1). The highest hydrocarbon concentrations were detected in the ground water samples collected from the borings located in the vicinity of the former gasoline USTs along Harrison Street. Elevated hydrocarbon concentrations were detected in ground water samples collected up, cross and downgradient of the USTs.

Hydrocarbon Distribution in Soil

Since ground water did not enter borings SB-F, SB-H and SB-L, *Cambria* collected and analyzed soil samples from immediately above the ground water table in these borings. TPHg and benzene were detected in the soil samples from all three borings. The highest concentrations detected were 350,000 ppb TPHg and 4,000 ppb benzene in SB-H (Table 2). In general, stained and odorous soils were first encountered at about 10 ft depth in all the borings drilled in and near Harrison Street.

RECOMMENDATIONS AND CONCLUSIONS

Cambria selected the boring locations to define the extent of hydrocarbons in soil and ground water downgradient, upgradient and crossgradient of the former site gasoline USTs. Since petroleum hydrocarbons were detected in soil and ground water samples collected from all borings, the horizontal extent of hydrocarbon contamination has not been defined at this time. The origin of the widespread hydrocarbons in soil and ground water is problematic. Based on our experience, two possible scenarios could be responsible for the widespread distribution of hydrocarbons at and adjacent to the site:

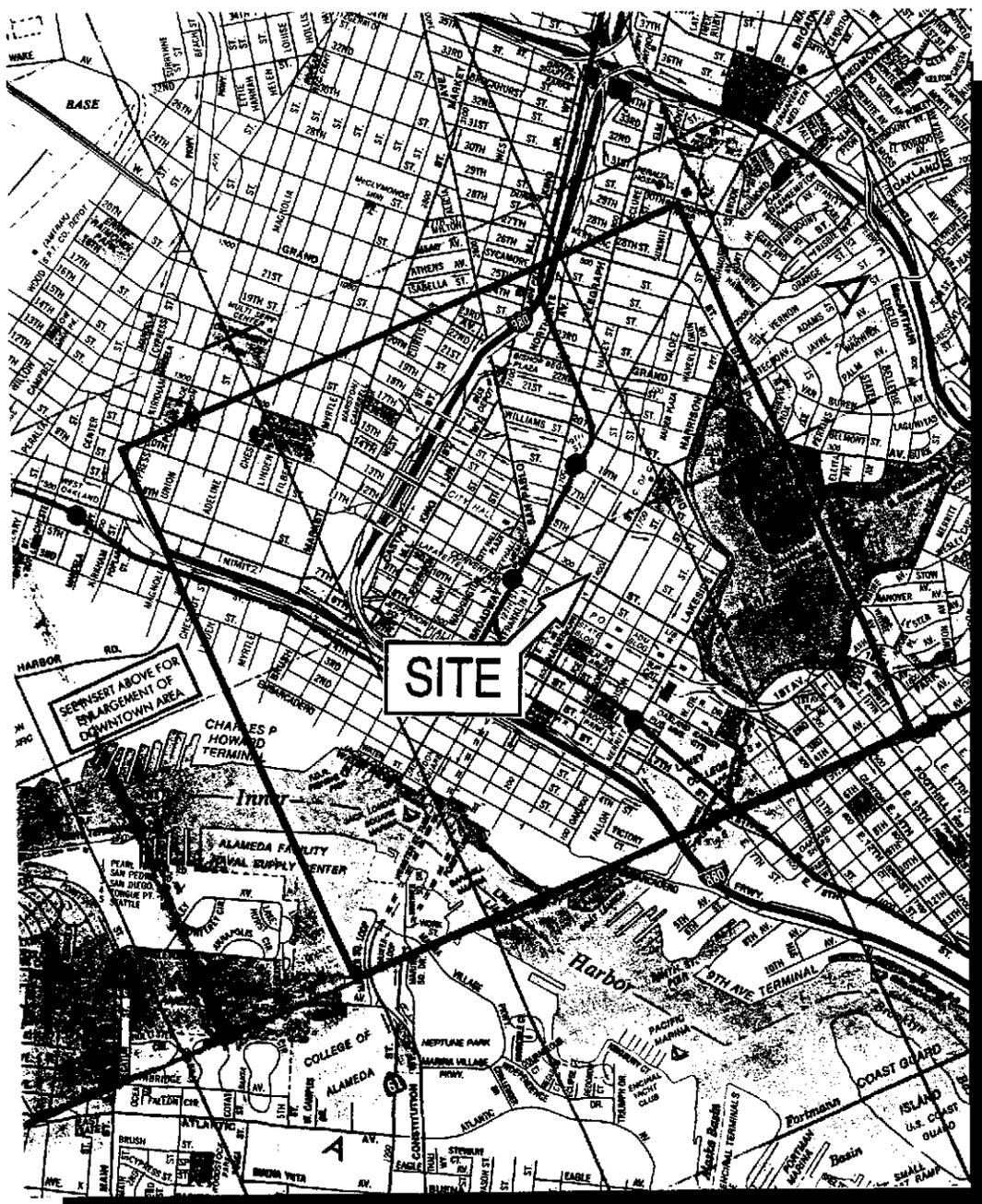
- 1) Significant leakage of gasoline from one or all of the tanks along Harrison Street, with subsequent up, cross and downgradient migration in ground water and vertical smearing during periods of high ground water.
- 2) Leakage from the Harrison Street tanks commingling with leakage from several other tanks on adjacent properties.

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Cambria believes that Scenario 2 above is more likely because:

- Historically, the ground water has flowed consistently towards the northeast. However, hydrocarbons have been detected both upgradient and crossgradient of the subject site USTs; and
- Ground water has probably been at an historical high (~ 20 ft depth) due to the heavy rains this past winter, and field indications of hydrocarbons were detected at about 10 ft depth in the borings along Harrison Street. It is unlikely that historical ground water fluctuations could have smeared hydrocarbons an additional 10 ft above the existing ground water table.

Therefore, we recommend that additional soil borings and grab water samples be collected further upgradient and downgradient of the former UST locations and that the property owner commission an historical background search to locate possible offsite sources. The historical review should include an extensive document and aerial photo review.



SITE

SEE INSERT ABOVE FOR
ENLARGEMENT OF
DOWNTOWN AREA

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Environmental Technology, Inc.

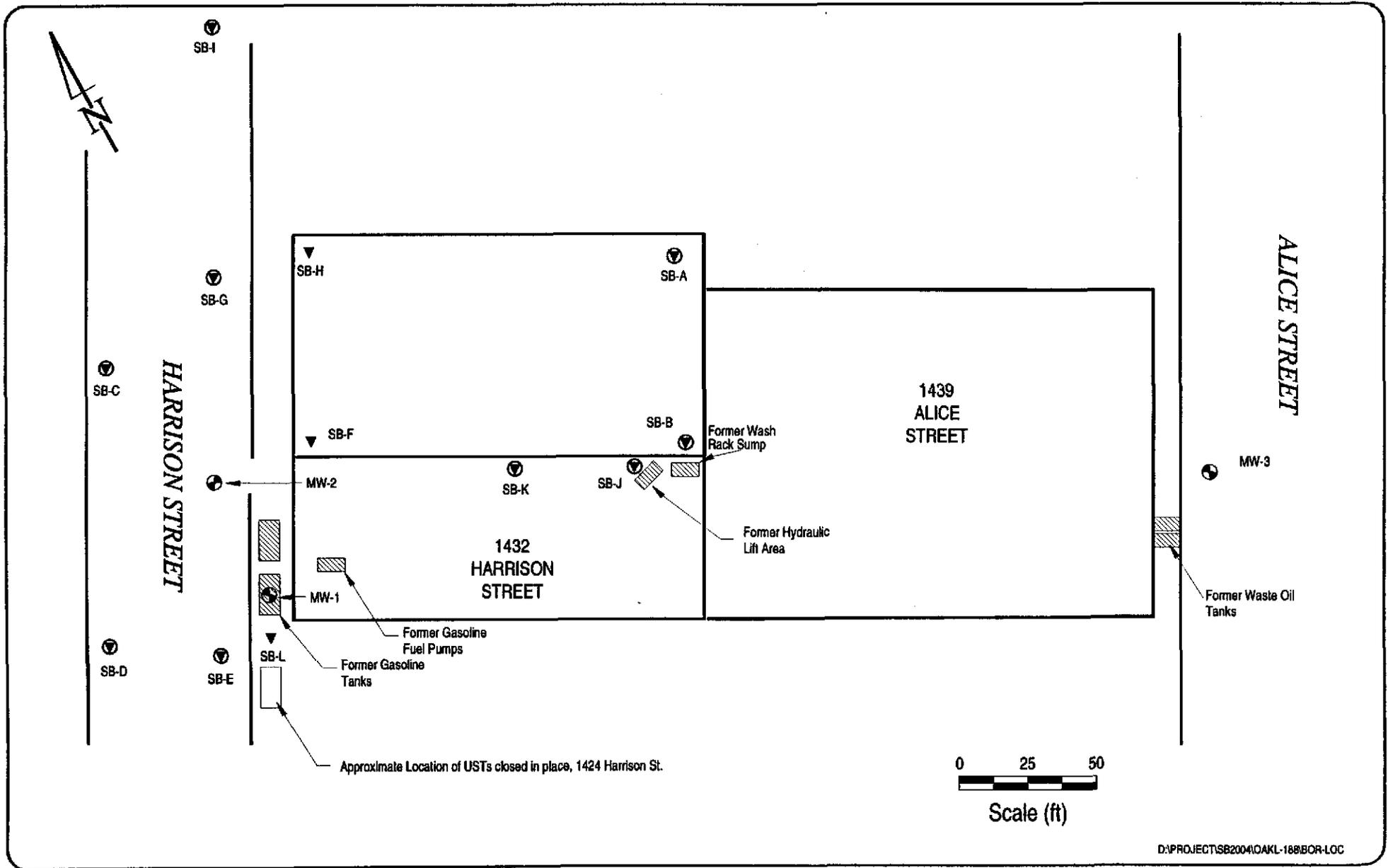


Site Location Map

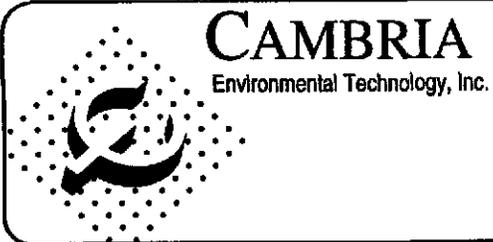
1432 Harrison Street
Oakland, California

FIGURE

1



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EXPLANATION

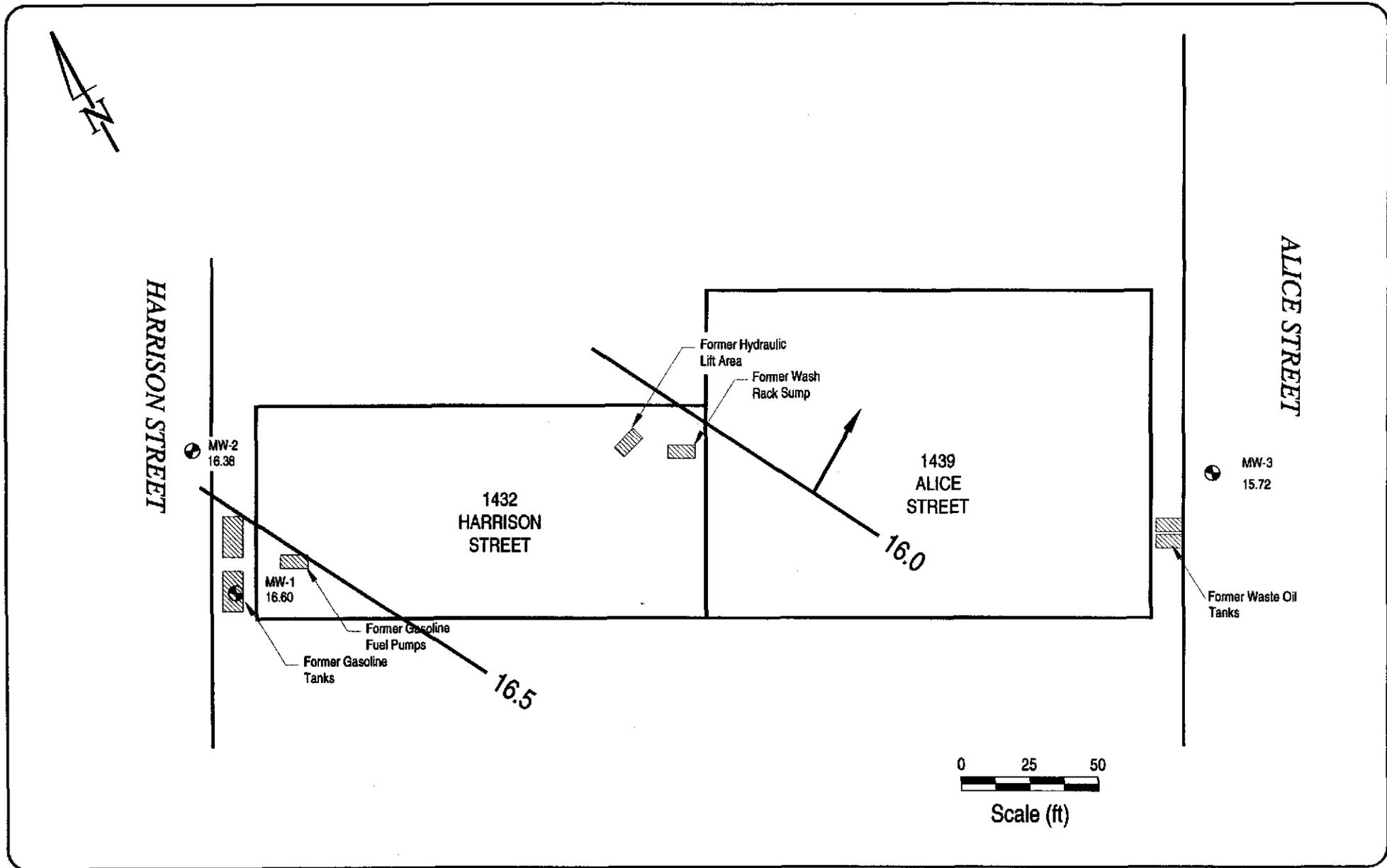
- ⊕ Previously Installed Ground Water Monitoring Well
- ▼ Soil Sample Location
- ⊕ Grab Ground Water Sample Location

Soil Boring and
Monitoring Well Locations

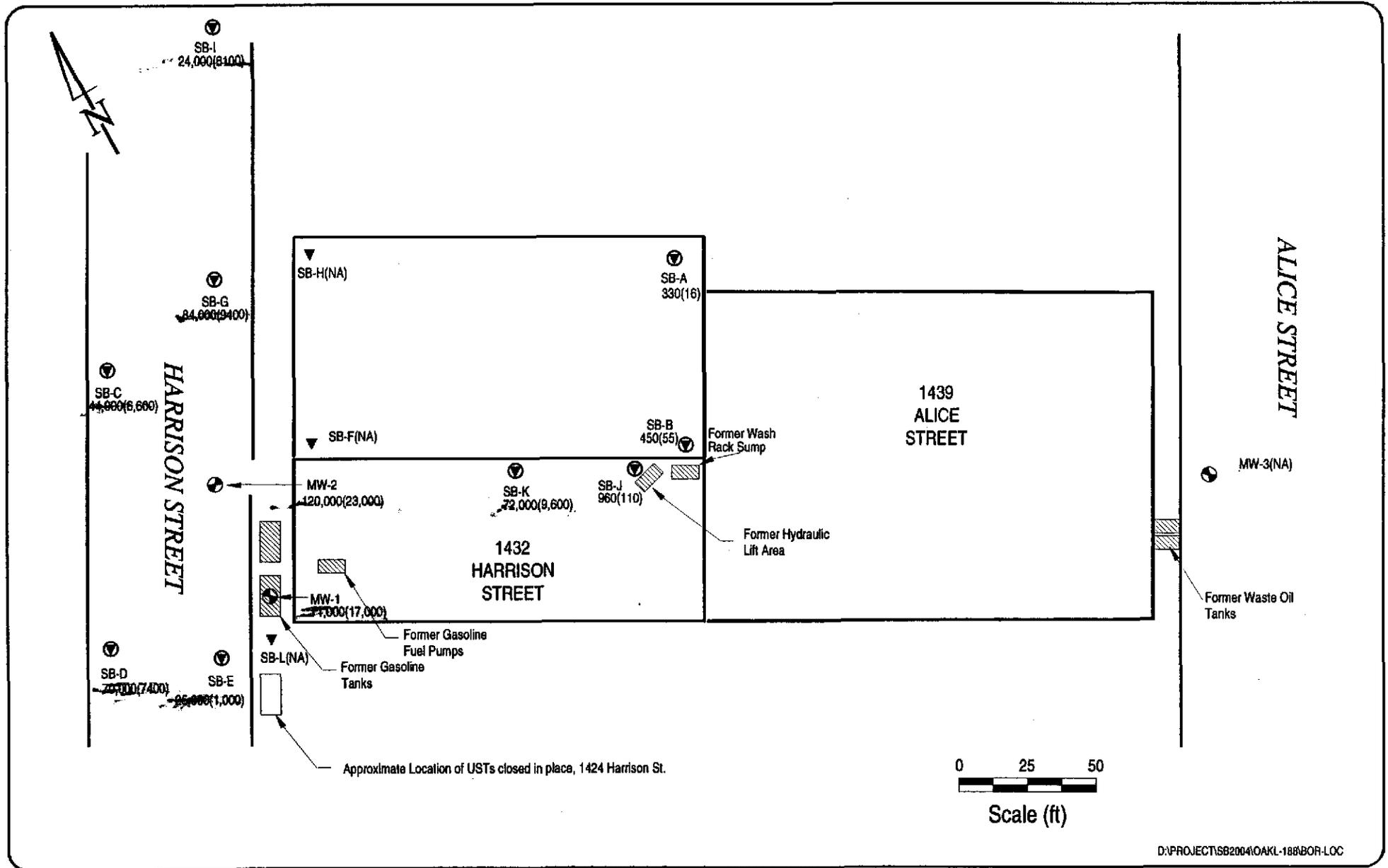
1432 Harrison Street
Oakland, California

FIGURE

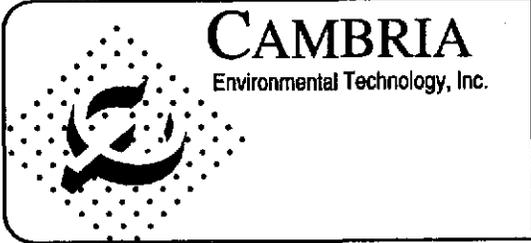
2



 <p>CAMBRIA Environmental Technology, Inc.</p>	<p>EXPLANATION</p> <ul style="list-style-type: none"> ● Ground Water Monitoring Well ▼ Former Ground Water Sample Location 	<p>Ground Water Elevations July, 7 1995 1432 Harrison Street Oakland, California</p>	<p>FIGURE 3</p>
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EXPLANATION	
	Ground Water Monitoring Well
	Soil Sample Location
	Grab/Well Ground Water Sample Location showing TPHg, (Benzene) concentrations-ppb
NA	No Ground Water Sample Analyzed

TPHg and Benzene Concentrations
in Ground Water
1432 Harrison Street
Oakland, California

FIGURE
4

Table 1. Ground Water Analytic Data -1432 Harrison Street, Oakland, California

Well/Boring ID	Date Sampled	Sample Type	Depth to Water During Drilling	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes
Concentrations in parts per billion (ppb)								
<u>Abbreviations</u>					<u>Notes</u>			
TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015 Benzene, ethylbenzene, toluene and xylenes analyzed by EPA Method 8020 nd = not detected					a = lighter gasoline range compounds are significant b = gasoline range compounds having broad chromatographic peaks are significant c = unmodified or weakly modified gasoline is significant d = lighter than water immiscible sheen is present --- = not sampled in the investigation			

Table 2. Soil Analytic Data - 1432 Harrison Street, Oakland, California

Boring and sample ID	Date Sampled	Sample Depth (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes
SB-F 20'	7/7/95	20.0	16 ^a	1.9	10	2.5	11
SB-H 20'	7/7/95	20.0	350 ^a	4.0	16	5.3	25
SB-L 20'	7/7/95	20.0	220 ^{bc}	1.6	4.1	4.8	24

Abbreviations

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015
 Benzene, ethylbenzene, toluene and xylenes analyzed by EPA Method 8020
 nd = not detected

Notes

a = unmodified or weakly modified gasoline is significant
 b = heavier gasoline range compounds are significant
 c = gasoline range compounds having broad chromatographic peaks are significant



ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2800

FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 1432 Harrison Street
Oakland, CA

PERMIT NUMBER 95461

LOCATION NUMBER _____

CLIENT

Name Clare Mark Roscoe Esq

Address 1626 Vallejo St Voice 415-922-4740

City San Francisco Zip 94123-5114

PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT

Name Cambridge Env. Tech., Inc.

Address 1144 65th St. Suite Fax 415-510-420-9170

City Oakland CA Voice 510-420-9177 Zip 94608

A. GENERAL

1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

- C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

- D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

- E. WELL DESTRUCTION. See attached.

TYPE OF PROJECT

Well Construction	Geotechnical Investigation
Cathodic Protection _____	General _____
Water Supply _____	Contamination <u>X</u>
Monitoring _____	Well Destruction _____

PROPOSED WATER SUPPLY WELL USE

Domestic _____	Industrial _____	Other _____
Municipal _____	Irrigation _____	

DRILLING METHOD:

Mud Rotary _____ Air Rotary _____ Auger _____
 Cable _____ Other GEO PROBE

DRILLER'S LICENSE NO. C57-705927

WELL PROJECTS

Drill Hole Diameter <u>4</u> in.	Maximum
Casing Diameter _____ in.	Depth _____ ft.
Surface Seal Depth _____ ft.	Number _____

GEOTECHNICAL PROJECTS

Number of Borings <u>~12</u>	Maximum
Hole Diameter <u>1</u> in.	Depth <u>35</u> ft.

ESTIMATED STARTING DATE 7/6/95
 ESTIMATED COMPLETION DATE 7/7/95

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-88.

Approved Wyman Hong Date 26 Jul 95
Wyman Hong

APPLICANT'S SIGNATURE [Signature] Date 7-5-95



EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

Engineering Services Info
 1330 Broadway, 2nd Flr
 Oakland, CA 94612
 (510) 238-4777

PAGE 2 of 2

PERMIT NUMBER X 95 00 410		SITE ADDRESS/LOCATION 1432 HARRISON ST	
APPROX. START DATE	APPROX. END DATE	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number)	
CONTRACTOR'S LICENSE # AND CLASS		CITY BUSINESS TAX #	
ATTENTION: 1) State law requires that the contractor/owner call <i>Underground Service Alerts (USA)</i> two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: _____ 2) 48 hours prior to starting work, you must call (510) 238-3651 to schedule an inspection.			
OWNER/BUILDER I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License Law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than \$500): <input type="checkbox"/> I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale). <input type="checkbox"/> I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or apartments thereon, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code). <input type="checkbox"/> I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law). <input type="checkbox"/> I am exempt under Sec. _____, B&PC for this reason _____.			
WORKER'S COMPENSATION <input type="checkbox"/> I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code). Policy # _____ Company Name _____ <input type="checkbox"/> I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars (\$100) or less).			
NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Chapter 6, Article 2 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.			
I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.			
Signature of Permittee <i>[Signature]</i>		Date 6/30/95	
<input checked="" type="checkbox"/> Agent for <input type="checkbox"/> Contractor <input type="checkbox"/> Owner			
DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
ISSUED BY <i>V. Curtis</i>		DATE ISSUED 6-30-95	

BORING LOG

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Project No: **54-188**

Phase

Task **003**

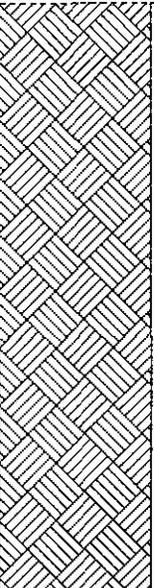
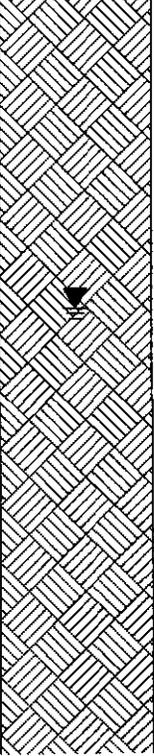
Boring ID

SB-A

Location **1432 Harrison Street**

Surface Elev. **~35 ft.**

Page **1** of **2**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0							0	
Ground Surface			ASPHALT					
			SAND ; (SP); brown; dry; 5% silt, 95% fine to medium grained sand; high estimated hydraulic conductivity					
5							5	
10							10	
15			Silty SAND ; (SM); tan-brown; moist; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity medium brown				15	
20							20	
25							25	
30							30	

Continued Next Page

Driller Vironex	Drilling Started 7/6/95	Notes: Schwartz Lot
Logged By JME	Drilling Completed 7/6/95	
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Boring ID

SB-A

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

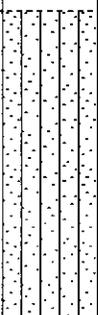
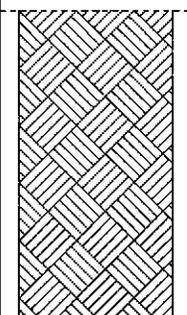
Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft.**

Page **2** of **2**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
30			Continued from previous page				30	
35							35	
40							40	Bottom of boring
45							45	
50							50	
55							55	
60							60	

BOR 54188 8/14/95

BORING LOG

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Project No: **54-188**

Phase

Task **003**

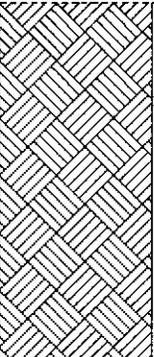
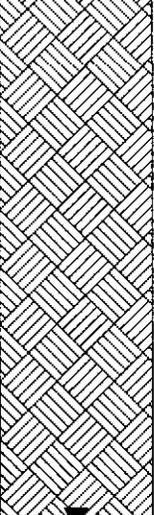
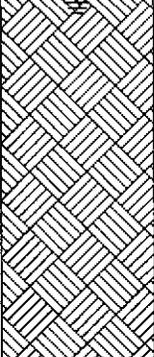
Boring ID

SB-B

Location **1432 Harrison Street**

Surface Elev. **~35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0			Ground Surface				0	
0 - 5			ASPHALT SAND ; (SP); brown; dry; 5% silt, 95% fine to medium grained sand; high estimated hydraulic conductivity				0 - 5	
5 - 10			Silty SAND ; (SM); tan-brown; dry; 2% clay, 13% silt, 85% fine to medium sand; moderate estimated hydraulic conductivity				5 - 10	
10 - 20			moist				10 - 20	
20 - 30							20 - 30	
30							30	Bottom of boring

Driller Vironex	Drilling Started 7/6/95	Notes: Schwartz Lot
Logged By JME	Drilling Completed 7/6/95	
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Boring ID

SB-C

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **-35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			ASPHALT GRAVELY FILL					
5			Silty SAND; (SM); brown; dry; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity				5	
10			grey; damp to moist				10	
15							15	
20			wet				20	
25							25	Bottom of boring
30							30	

Driller **Vironex**

Drilling Started **7/6/95**

Notes: **Harrison Street 50' north**

Logged By **JME**

Drilling Completed **7/6/95**

of MW-2

Water-Bearing Zones

Grout Type **Portland Type I/II**

BORING LOG

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Project No: **54-188**

Phase

Task **003**

Boring ID

SB-D

Location **1432 Harrison Street**

Surface Elev. **~35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0							0	
			ASPHALT GRAVELY FILL					
			Silty SAND; (SM); brown; dry; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity					
5							5	
			tan-brown					
10							10	
			grey-brown; moist					
15							15	
			brown with grey staining; wet					
20							20	
25							25	Bottom of boring
30							30	

Driller Vironex	Drilling Started 7/6/95	Notes: Harrison Street 60' south
Logged By JME	Drilling Completed 7/6/95	of MW-2
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Project No: **54-188**

Phase

Task **003**

Boring ID

SB-E

Location **1432 Harrison Street**

Surface Elev. **~35 ft,**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			ASPHALT GRAVELY FILL					
5			Silty SAND; (SM); brown; moist; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity				5	
10			grey; wet				10	
15							15	
20							20	
25							25	
30							30	Bottom of boring

Driller Vironex	Drilling Started 7/6/95	Notes: Harrison Street 62' south
Logged By JME	Drilling Completed 7/6/95	of MW-2
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Boring ID

SB-F

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0							0	
			ASPHALT					
			Silty SAND: (SM); brown; moist; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity					
5							5	
			tan					
10							10	
15							15	
20			brown-grey; wet	160			20	
25							25	
30							30	
								Bottom of boring

Driller **Vironex**

Drilling Started **7/7/95**

Notes: **Schwartz Lot**

Logged By **JME**

Drilling Completed **7/7/95**

Water-Bearing Zones

Grout Type **Portland Type I/II**

BOR 54188 8/14/95

BORING LOG

Boring ID

SB-G

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			ASPHALT GRAVELY FILL					
5			Silty SAND; (SM); brown; dry; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity				5	
10			grey; damp to moist				10	
15			moist				15	
20			moist-wet				20	
25							25	
30							30	Bottom of boring

Driller Vironex	Drilling Started 7/7/95	Notes: Harrison Street 75' north
Logged By JME	Drilling Completed 7/7/95	of MW-2
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Boring ID

SB-H

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft,**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0			Ground Surface				0	
			ASPHALT					
5			Silty SAND; (SM); brown; moist; 3% clay, 12% silt, 85% fine to medium grained sand; low plasticity; moderate estimated hydraulic conductivity				5	
10			grey-brown; moist				10	
15			grey				15	
20			wet	350			20	
25							25	Bottom of boring
30							30	

Driller Vironex	Drilling Started 7/7/95	Notes: Schwartz Lot
Logged By JME	Drilling Completed 7/7/95	
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Project No: **54-188**

Phase

Task **003**

Boring ID

SB-1

Location **1432 Harrison Street**

Surface Elev. **-35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface		ASPHALT GRAVELY FILL				0	
5			Silty SAND: (SM); brown; dry; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity				5	
10							10	
15			moist				15	
20			wet				20	
25							25	
30							30	Bottom of boring

Driller Vironex	Drilling Started 7/7/95	Notes: Harrison Street 180' north
Logged By JME	Drilling Completed 7/7/95	of MW-2
Water-Bearing Zones	Grout Type Portland Type I/II	

BOR 54188 8/14/95

BORING LOG

Boring ID

SB-J

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft,**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			CONCRETE					
5			Silty SAND: (SM); medium-brown; moist; 2% clay, 13% silt, 85% fine to medium grained sand; low plasticity; moderate estimated hydraulic conductivity				5	
10			grey-brown				10	
15			medium-brown				15	
20			wet				20	
25							25	
30							30	Bottom of boring

Driller **Vironex**

Drilling Started **7/7/95**

Notes: **Borsuk Lot**

Logged By **JME**

Drilling Completed **7/7/95**

Water-Bearing Zones

Grout Type **Portland Type I/II**

BORING LOG

Boring ID

SB-K

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft.**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			CONCRETE					
5			Silty SAND; (SM); medium-brown; moist; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity				5	
10							10	
15							15	
20			wet				20	
25							25	
30							30	Bottom of boring

Driller **Vironex**

Drilling Started **7/7/95**

Notes: **Borsuk Lot**

Logged By **JME**

Drilling Completed **7/7/95**

Water-Bearing Zones

Grout Type **Portland Type I/II**

BORING LOG

Boring ID

SB-L

Client: **Alvin H. Bacharach and Barbara Jean Borsuk**

Location **1432 Harrison Street**

Project No: **54-188**

Phase

Task **003**

Surface Elev. **~35 ft,**

Page **1** of **1**

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			CONCRETE					
5			Silty SAND; (SM); dark-brown; wet; 2% clay, 13% silt, 85% fine to medium grained sand; moderate estimated hydraulic conductivity				5	
10			grey-brown				10	
15							15	
20			grey				20	
				220			20	Bottom of boring
25							25	
30							30	

Driller **Vironex**

Drilling Started **7/7/95**

Notes: **Borsuk Sidewalk**

Logged By **JME**

Drilling Completed **7/7/95**

Water-Bearing Zones

Grout Type **Portland Type I/II**

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Attachment C

Analytic Results for Ground Water and Soil

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

07/14/95

Dear John:

Enclosed are:

- 1). the results of 4 samples from your # 54-188 ; Borsuck project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,



Edward Hamilton

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553

Tele: 510-798-1620 Fax: 510-798-1622

Cambria Environmental Technology 1144 65th Street, Suite C Oakland, CA 94608	Client Project ID: # 54-188; Borsuck	Date Sampled: 07/06/95
		Date Received: 07/07/95
	Client Contact: John Espmora	Date Extracted: 07/08/95
	Client P.O:	Date Analyzed: 07/08/95

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) ⁺	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
53938	SB-A	W	330,c/d	16	3.6	1.3	4.9	100
53939	SB-C	W	44,000,a	6600	5900	980	4400	104
53940	SB-D	W	70,000,a	7400	10,000	1600	7200	102
53941	SB-E	W	25,000,a	1000	3000	610	2700	102
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W	50 ug/L	0.5	0.5	0.5	0.5	0.5	
	S	1.0 mg/kg	0.005	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/08/95

Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.0	100.7	98.4	100	100.7	98.4	2.3
Benzene	0	9	9	10	90.0	90.0	0.0
Toluene	0	9.5	9.6	10	95.0	96.0	1.0
Ethyl Benzene	0	9.7	9.7	10	97.0	97.0	0.0
Xylenes	0	30	30.1	30	100.0	100.3	0.3
TPH (diesel)	0	141	142	150	94	95	0.7
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMPBELL ANALYTICAL
 110 2nd AVENUE, # D7
 (510) 700-1020 PACHECO, CA 94653 FAX (510) 700-1022

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH 24 HOUR 48 HOURS 5 DAY

REPORT TO: *DAW ESPINOZA* BILL TO: *CAMARIA*
 COMPANY: *CAMARIA ENV. TECH*
 TELE: *420-9137* FAX #: *420-9130*
 PROJECT NUMBER: *59-188* PROJECT NAME: *BORESUK*
 PROJECT LOCATION: *CAJONWOOD 1432 24th Avenue 502 SF.* SAMPLER SIGNATURE: *[Signature]*

ANALYSIS REQUEST

3TEX & TPH as Gasoline (602/8025 & 8015)	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 EPA/8250 36F)	Total Petroleum Hydrocarbons (4163)	EPA 501/8010	EPA 502/8020	EPA 508/8080	EPA 508/8080 - PCBs Only	EPA 824/8240/8260	EPA 825/8270	CAN - 17 Metals	EPA - Priority Pollutant Metals	LEAD (7240/7420/8292/8010)	ORGANIC LEAD	PCB
--	----------------------	--	-------------------------------------	--------------	--------------	--------------	--------------------------	-------------------	--------------	-----------------	---------------------------------	----------------------------	--------------	-----

UI: 53949
 53950
 53951
 53952
 53953
 53954
 53955
 53956

SAMPLE ID	LOCATION	SAMPLING		# CONTAINERS	TYPE CONTAINERS	MATRIX					METHOD PRESERVED			
		DATE	TIME			WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO3	OTHER	
SB-C	5'	7/6/95		1	Bags	X								
SB-C	10'													
SB-C	15'													
SB-C	20'													
SB-D	5'													
SB-D	10'													
SB-D	15'													
SB-D	20'													
SB-E	5'													
SB-E	10'													
SB-E	15'													
SB-E	20'													

TEMPERATURE: *15°C*
 CLOSURE CONDITION: *✓*
 LEAK SPACE ABSENT: *✓*
 PRESERVATIVE APPROPRIATE: *✓*
 CONTAINERS: *✓*

RELINQUISHED BY: *[Signature]* DATE: *7/6/95* TIME: *4-PM* RECEIVED BY: *D. Louie 743*
 RELINQUISHED BY: *D. Louie 743* DATE: *7/7/95* TIME: *6:00* RECEIVED BY: *Richard Martinez 2402*
 RELINQUISHED BY: *Richard Martinez* DATE: *7/8/95* TIME: *9:48* RECEIVED BY LABORATORY: *[Signature]*

REMARKS:
 53957
 53958
 53959
 53960

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

07/21/95

Dear John:

Enclosed are:

- 1). the results of 7 samples from your # 55-188; Borsuk project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,



Edward Hamilton

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/06-07/07/95

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.000	2.158	2.003	2.03	106	99	7.5
Benzene	0.000	0.168	0.190	0.2	84	95	12.3
Toluene	0.000	0.178	0.204	0.2	89	102	13.6
Ethylbenzene	0.000	0.178	0.200	0.2	89	100	11.6
Xylenes	0.000	0.554	0.626	0.6	92	104	12.2
TPH (diesel)	0	284	281	300	95	94	1.1
TRPH (oil & grease)	0.0	18.8	18.1	20.8	90	87	3.8

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/10/95

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.000	1.725	1.807	2.03	85	89	4.6
Benzene	0.000	0.206	0.184	0.2	103	92	11.3
Toluene	0.000	0.214	0.194	0.2	107	97	9.8
Ethylbenzene	0.000	0.200	0.194	0.2	100	97	3.0
Xylenes	0.000	0.612	0.606	0.6	102	101	1.0
TPH (diesel)	0	284	285	300	95	95	0.2
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/06/95-07/07/95

Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.0	99.7	101.0	100	99.7	101.0	1.2
Benzene	0	9.4	9.2	10	94.0	92.0	2.2
Toluene	0	10	9.7	10	100.0	97.0	3.0
Ethyl Benzene	0	10.2	10	10	102.0	100.0	2.0
Xylenes	0	31.3	30.9	30	104.3	103.0	1.3
TPH (diesel)	0	142	141	150	95	94	0.8
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/11/95

Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.0	91.2	86.2	100	91	86	5.6
Benzene	0	10.9	9.6	10	109	96	12.7
Toluene	0	11.1	10.1	10	111	101	9.4
Ethyl Benzene	0	10.6	10.2	10	106	102	3.8
Xylenes	0	32.5	31.7	30	108	106	2.5
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORING AND SAMPLING

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch type sampler or are collected from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinseage generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labelled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the

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analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.