



January 6, 1997

Mr. Thomas Peacock  
Alameda County Department  
of Environmental Health  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, California 94502

Re: **Subsurface Investigation Report**  
1432-1434 Harrison Street  
Oakland, California

Dear Mr. Peacock:

This report presents the results of the subsurface investigation performed by Cambria Environmental Technology, Inc. (Cambria) on October 3, 1996 for the site referenced above. The objective of this investigation was to further assess the horizontal extent of hydrocarbons in soil and ground water as requested by the Alameda County Department of Environmental Health (ACDEH) in July 1996. A site summary, our investigation scope of work, investigation results, and conclusions are presented below.

## SITE SUMMARY

*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 down gradient of 1424 Harrison Street, where two USTs were closed in place (Figure 1). A Chevron service station located at 14th Street and Harrison Street, up gradient 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 underground storage tanks (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

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Mr. Thomas Peacock  
January 6, 1997

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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, one sump, and associated 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.

**August 1994 Subsurface Investigation:** In August 1994, Levine Fricke conducted a subsurface investigation to assess the extent of hydrocarbons in soil and ground water. The investigation report indicated that no hydrocarbons were detected in soil and only 300 ppb total petroleum hydrocarbons as oil (TPHo) were detected in ground water in well MW-3. TPH as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in ground water samples collected from monitoring wells MW-1 and MW-2, and low concentrations of benzene and toluene were detected in a soil sample collected from the boring for MW-2.

**July 1995 Subsurface Investigation:** In July 1995, Cambria conducted a subsurface investigation to further define the extent of hydrocarbons in soil and ground water. Both TPHg and benzene were detected in grab ground water samples collected from 9 of the 12 soil borings drilled on the site, on the adjacent properties north and south of 1432 Harrison St., and in Harrison Street. The maximum concentrations of 84,000 parts per billion (ppb) TPHg and 9,600 ppb benzene were detected in ground water in the vicinity of the former gasoline USTs along Harrison Street. Elevated hydrocarbon concentrations were detected in ground water samples collected up, cross, and down gradient of the USTs (Attachment A).

TPHg and benzene were detected in soil collected from 3 soil borings at maximum concentrations of 350 parts per million (ppm) TPHg and 4 ppm benzene in boring SB-H. In general, stained and odorous soils were first encountered at about 10 ft depth in all the borings drilled in and near Harrison Street (Attachment A).

**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 fourth quarter 1994, ground water fluctuated beneath the site from 14.85 to 19.15 ft depth. The ground water flow direction is generally towards the northeast. The maximum historical concentrations of TPHg and benzene detected in the wells are 170,000 ppb and 30,000 ppb, respectively, detected in well MW-1. In an April 26, 1995 letter, the ACDEH gave permission to cease collecting ground water samples from MW-3 because only very low hydrocarbon concentrations were detected initially and no hydrocarbons were detected during subsequent quarterly sampling.

## INVESTIGATION SCOPE OF WORK

Our investigation objectives were to further define the up and down gradient extent of hydrocarbons in ground water and to assess whether UST's from the adjacent up gradient property were contributing hydrocarbons to the subject site. To meet these objectives, we drilled five soil borings and completed three of the soil borings as monitoring wells MW-4, MW-5, and MW-6. In addition, we advanced two angle borings immediately beneath the upgradient USTs located in the public right-of-way to assess whether soil beneath the upgradient tanks contained hydrocarbons. We collected soil samples from all the soil borings, and, after well development, collected ground water samples from the new monitoring wells. The soil and water samples were analyzed for TPHg, BTEX, and MTBE (Figure 1). Well installation permits were obtained from the City of Oakland and from Alameda County Zone 7 Water Agency.

## INVESTIGATION RESULTS

The results of Cambria's subsurface investigation performed in October 1996 are summarized below. Analytic results for soil and ground water are summarized in Tables 1 and 2, respectively. The attachments included in this report are:

- A - Previous Analytic Results
- B - Boring Logs/Well Construction Detail
- C - Analytic Results for Soil and Ground Water
- D - Well Installation Permits
- E - Standard Field Procedures
- F - Survey Report
- G - Well Development and Sampling Data

### Soil Borings

- Personnel Present:* Staff Engineer Philip T. Gittens conducted all field work under the supervision of Registered Geologist N. Scott MacLeod.
- Permits:* Encroachment and Excavation Permits from the City of Oakland and a Drilling Permit from the Zone 7 Water Agency (Attachment C).
- Drilling Company:* Gregg Drilling of Pacheco, California.
- Drilling Dates:* October 2 and 3, 1996.
- Drilling Methods:* 8" hollow-stem auger.

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- Number of Borings:** Five (Figure 1). Borings SB-M, SB-N, SB-O, SB-P, and SB-Q. Borings SB-M, SB-N, and SB-O were converted to monitoring wells MW-4, MW-5, and MW-6, respectively.
- Ground Water Depth:** 19 to 20 ft (Attachment A).
- Boring Depths:** 25 to 29 ft (Attachment B).
- Sediment Lithology:** The site is underlain by moderate to high estimated permeability silty sand.
- Sample Screening:** A GasTech organic vapor analyzer and physical observations were used to screen soil samples from each boring.
- Laboratory Analyses:** Selected soil and ground water samples were analyzed for:
- TPHg by Modified EPA Method 8015;
  - BTEX by EPA Method 8020; and
  - MTBE by EPA Method 8020 (Attachment B).
- Soil Disposal:** Soil cuttings were drummed and stored on site pending disposal.

## Well Construction

Ground water monitoring wells MW-4 and MW-5 were installed northwest of the site on Harrison Street and 15th Street to define the down gradient extent of hydrocarbons (Figure 1). Well MW-6 was installed in Harrison Street, approximately 81 ft north of the northeast corner of the Harrison Street/14th Street intersection, to monitor the potential migration of hydrocarbons from up gradient of the site.

- Well Materials:** Monitoring wells MW-4, MW-5, and MW-6 were constructed using two-inch diameter, schedule 40 PVC pipe with a screen slot size of 0.010" and, #2/16 sand (Attachment A).
- Screened Interval:** Ground water stabilized in the wells at about 19 ft depth. Therefore, monitoring wells were screened from 14 to 29 ft depth.
- Well Development/  
Sampling:** Monitoring wells MW-4, MW-5, and MW-6 were developed on October 24 and sampled on October 28, 1996 by Blaine Tech Services of San Jose, California (Blaine).
- Development Method:** Blaine developed the wells using a Middleberg pump.
- Ground Water Analyses:** Ground water samples from the wells were analyzed for:
- TPHg by Modified EPA Method 8015;
  - BTEX by EPA Method 8020; and
  - MTBE by EPA Method 8020 (Attachment B).

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**Ground Water Flow Direction:** Based on October 28, 1996 groundwater elevations, ground water flows toward the north (Figure 2).

**Ground Water Depth:** Ground water depth was gauged on October 28, 1996 at about 19 ft depth.

**Wellhead Survey:** The top-of-casing elevations were measured on October 18 1996 by professional land surveyor L. Wade Hammond.

**Waste Disposal:** Purge water from the borings and wells and steam clean rinseate was drummed and stored on site pending disposal.

## HYDROCARBON DISTRIBUTION IN SOIL

No hydrocarbons were detected in soil samples collected from borings SB-M, SB-N, and SB-O. Hydrocarbons were detected in soil collected from borings SB-P and SB-Q at up to 1,900 ppm TPHg and 2.0 ppm benzene.

## HYDROCARBON DISTRIBUTION IN GROUND WATER

Although elevated hydrocarbon concentrations were detected in down gradient monitoring well MW-4, low hydrocarbon concentrations were detected in cross gradient well MW-5, and no hydrocarbons were detected in up gradient well MW-6.

## CONCLUSIONS AND RECOMMENDATIONS

The non-detect analytic results for soil from the borings for wells MW-4, MW-5 and MW-6 indicate that significant hydrocarbon concentrations in soil are restricted to the hydrocarbon source area near well MW-1. Also, the horizontal extent of hydrocarbons in soil is now defined by up gradient well MW-6, cross gradient wells MW-3 and MW-5, and down gradient well MW-4. The elevated hydrocarbon concentrations detected in soil samples from SB-P and SB-Q indicate that the up gradient tanks, historically operated by the adjacent property owner, released hydrocarbons into the subsurface at some time in the past. These hydrocarbon concentrations may have impacted ground water and contributed hydrocarbons to the ground water beneath the subject property.

Analytic results for ground water suggest that the extent of hydrocarbons is defined by up gradient well MW-6 and cross gradient wells MW-3 and MW-5. Hydrocarbon concentrations detected in down gradient well MW-4

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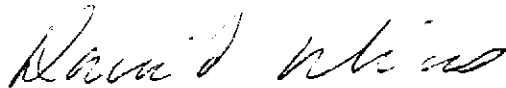
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indicate that dissolved hydrocarbons are present 200 ft down gradient of the site. The significant difference in hydrocarbon concentrations detected in samples collected from wells MW-4 and MW-5 suggests that either natural or man-made subsurface conduits may be affecting the hydrocarbon migration. Additional ground water monitoring of existing wells should further assess the extent of hydrocarbons in ground water and will provide data for deciding whether additional down gradient ground water definition is merited.

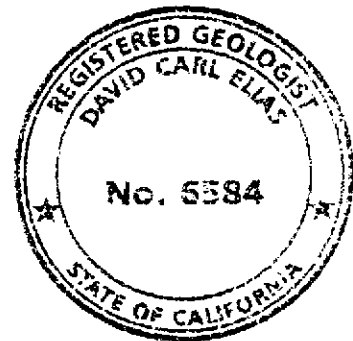
#### CLOSING

We appreciate this opportunity to provide environmental consulting services to Alvin H. Bacharach and Barbara Jean Borsuk. Please call me at (510) 420-9176 with any questions or comments.

Sincerely,  
Cambria Environmental Technology, Inc.



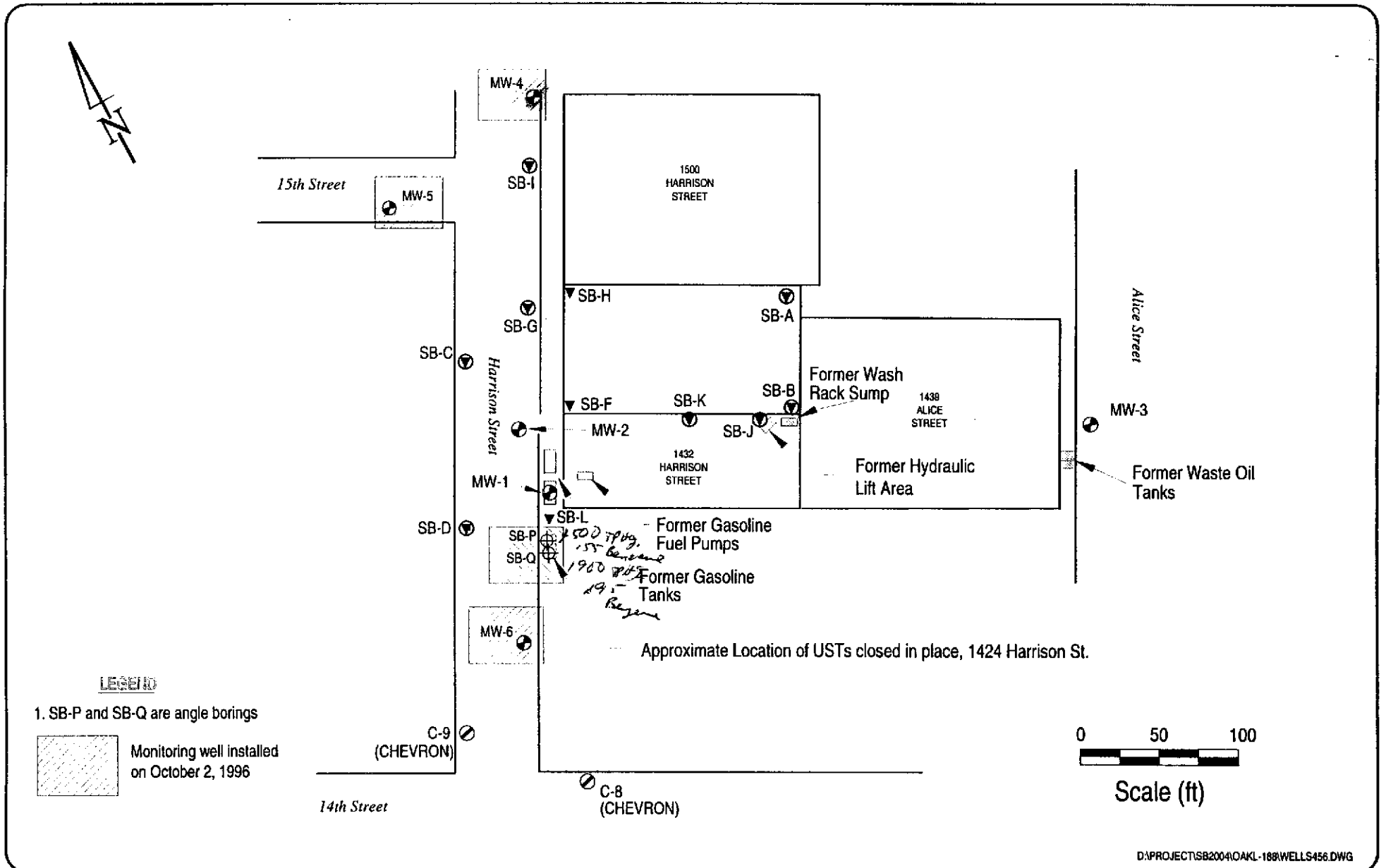
David Elias, R.G.  
Project Geologist



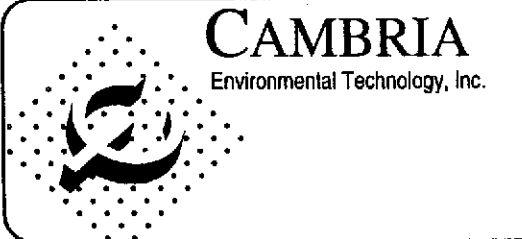
Attachments: A - Previous Analytic Results  
B - Boring Logs/Well Construction Detail  
C - Analytic Results for Soil and Ground Water  
D - Well Installation Permits  
E - Standard Field Procedures  
F - Survey Report  
G - Well Development and Sampling Data

cc: Mr. Mark Borsuk, 1626 Vallejo Street, San Francisco, CA 94123-5116

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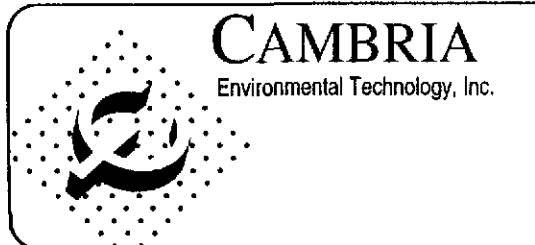
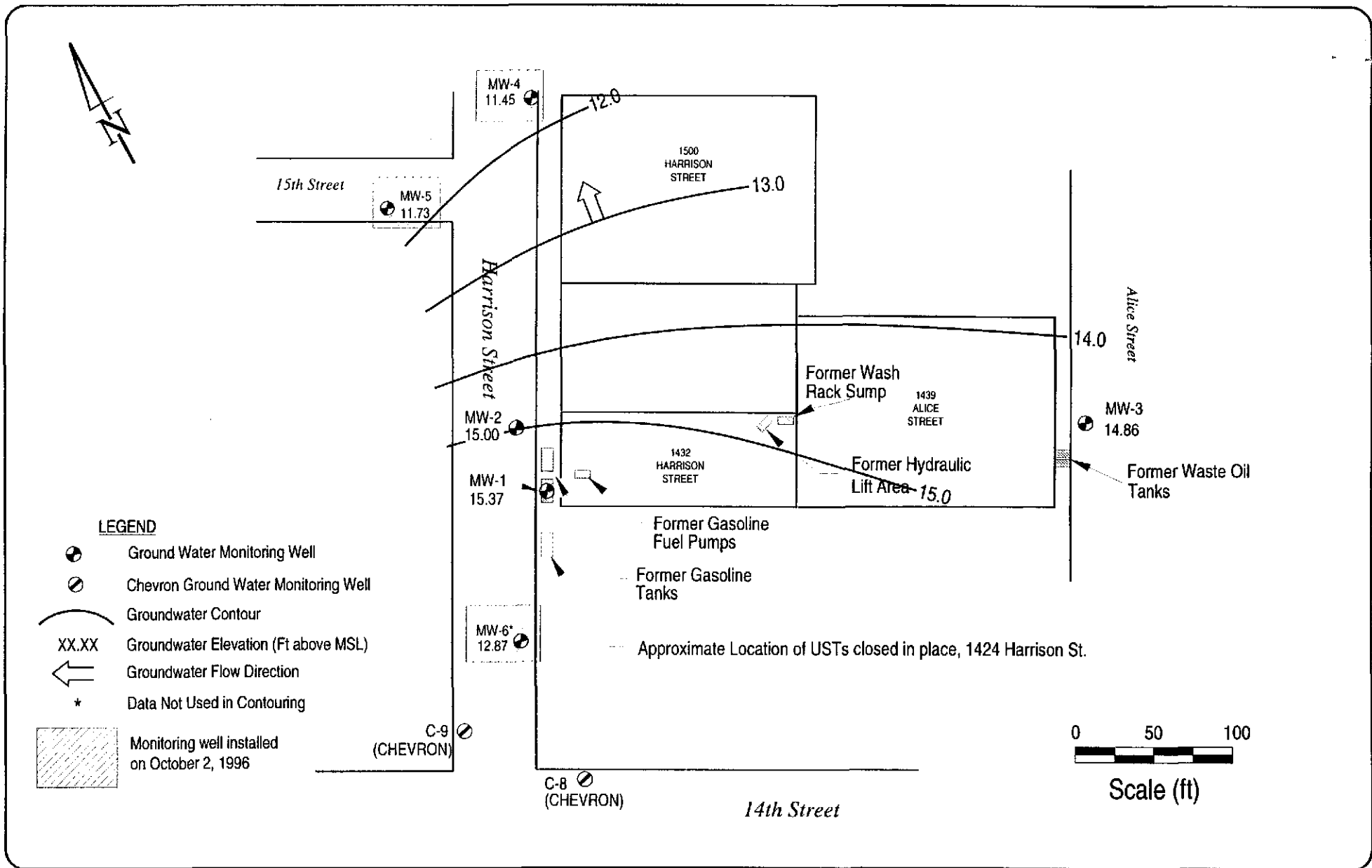
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EXPLANATION	
	Ground Water Monitoring Well
	Chevron Ground Water Monitoring Well
	Soil Sample Location (7/95)
	Grab Ground Water Sample Location (7/95)
	Soil Boring Location (10/96)

Soil Boring and Monitoring Well Locations  
 1432 Harrison Street  
 Oakland, California

FIGURE  
 1



1432 Harrison Street  
Oakland, California

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Groundwater Elevation Map  
October 28, 1996

FIGURE  
**2**



**Table 1. Soil Sample Analytic Data - 1432 Harrison Street, Oakland, California**

Soil Boring/ (Monitoring Well)	Sampling Date	TPHg	Benzene	Toluene (Concentrations reported in parts per million.)	Ethylbenzene	Xylenes	Methyl tert-butyl ether
SB-M/(MW-4)-20.0	10/02/96	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-N/(MW-5)-20.0	10/02/96	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-O/(MW-6)-20.5	10/03/96	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-P-3.75	10/03/96	3.8	<0.005	0.016	0.017	0.084	<0.05
SB-P-12.7	10/03/96	1500 <sup>a,b</sup>	0.55	14	25	100	2.0
SB-Q-3.75	10/03/96	4.3 <sup>c</sup>	0.006	0.024	0.027	0.11	<0.02
SB-Q-9.6	10/03/96	1900 <sup>a,b</sup>	0.95	15	43	200	<1.4

**Notes:**

TPHg= Total purgeable petroleum hydrocarbons as gasoline by EPA method Modified 8015.

Benzene, toluene, ethylbenzene, xylenes (BTEX) by EPA method 8020.

Methyl tert-butyl ether by modified EPA method 8020.

<x=not detected above x parts per million

<sup>a</sup> = Heavier gasoline range compounds significant

<sup>b</sup> = Gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline

<sup>c</sup> = Strongly aged gasoline or diesel range compounds are significant

**Table 2. Ground Water Analytic Data - 1432 Harrison Street, Oakland, California**

Monitoring Well (/Soil Boring)	Sampling Date	Top of Casing	Depth to Water	Groundwater Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	Methyl tert-butyl ether
(Concentrations reported in parts per billion.)										
MW-4/(SB-M)	10/28/96	30.77	19.32	11.45	10,000	3,900	420	400	360	<200
MW-5/(SB-N)	10/28/96	31.61	19.88	11.73	90	4.0	0.60	<0.50	<0.50	16
MW-6/(SB-O)	10/28/96	32.89	20.02	12.87	<50	<0.50	<0.50	<0.50	<0.50	<2.0

Notes:

TPHg= Total purgeable petroleum hydrocarbons as gasoline by EPA method Modified 8015.

Benzene, toluene, ethylbenzene, xylenes (BTEX) by EPA method 8020.

Methyl tert-butyl ether by modified EPA method 8020.

<x=not detected above x parts per billion

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**Attachment A**

Previous Analytic Results



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)	TPH <sub>g</sub>	Benzene	Concentrations in parts per million (ppm)		
					Toluene	Ethylbenzene	Xylenes
SB-F 20'	7/7/95	20.0	16 <sup>a</sup>	1.9	10	2.5	11
SB-II 20'	7/7/95	20.0	350 <sup>a</sup>	4.0	16	5.3	25
SB-L 20'	7/7/95	20.0	220 <sup>bc</sup>	1.6	4.1	4.8	24

Abbreviations

TPH<sub>g</sub> = 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

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**Attachment B**

Boring Logs/Well Construction Detail

DRILLING LOG				Well ID <b>MW-4</b>	Boring ID <b>SB-M</b>			
Client: <b>Alvin H. Bacharach and Barbara Jean Borsuk</b>				Location <b>1432 Harrison Street, Oakland, CA</b>				
Project No: <b>54-188</b>		Phase	Task <b>015</b>	Surface Elev. <b>N/A</b> ft, Page <b>1</b> of <b>1</b>				
Depth (feet)	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Well Construction Graphics	Depth (feet)	Well Construction Details
0	Ground Surface						0	T.O.C. Elev.
5			<b>Asphalt</b> <b>Cement</b> <b>Silty SAND; (SM);</b> light brown; dense; dry; 30% silt, 70% medium grained sand; no plasticity; moderate estimated permeability.				5	
10			Damp.				10	
15			<b>SAND; (SP);</b> Moist; very dense; 10% silt, 90% medium grained sand; moderate to high estimated permeability. Brown/grey.				15	
20			Grey; wet.	< 1.0			20	
25							25	Bottom of boring
30							30	
35							35	

Driller <b>Gregg Drilling</b>	Development Yield <b>N/A</b>	Bentonite Seal <b>11' to 13'</b>
Logged By <b>Philip Gittens</b>	Well Casing <b>2"</b> Dia. <b>0'</b> to <b>15'</b>	Sand Pack <b>13' to 25'</b>
Drilling Started <b>10/2/96</b>	Casing Type <b>Schedule 40 PVC</b>	Sand Pack Type <b>#2/16 Sand</b>
Drilling Completed <b>10/2/96</b>	Well Screen <b>2"</b> Dia. <b>15'</b> to <b>25'</b>	Static Water Level <b>19.32</b> ft Depth
Construction Completed <b>10/2/96</b>	Screen Type <b>Schedule 40 PVC</b>	Date <b>10/28/96</b>
Development Completed <b>10/24/96</b>	Slot Size <b>0.010"</b>	Notes: <b>East side of Harrison</b>
Water Bearing Zones <b>N/A</b>	Drilling Mud <b>N/A</b>	<b>Street, 37' north of 15th Street.</b>
	Grout Type <b>Portland I/II</b>	

WELL 54188 12/11/96



**DRILLING LOG**

Well ID **MW-5**

Boring ID

**SB-N**

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

Location **1432 Harrison Street, Oakland, CA**

Project No: **54-188**

Phase

Task**015**

Surface Elev. **N/A ft.**

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Depth (feet)	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Well Construction Graphics	Depth (feet)	Well Construction Details
0	Ground Surface						0	T.O.C. Elev.
0-1			<b>Asphalt</b>					
1-2			<b>Cement</b>					
2-5			<b>SAND</b> : (SP); light brown; dry; 10% silt, 90% medium grained sand; no plasticity; moderate to high estimated permeability.				5	
5-10							10	
10-15			<b>Silty SAND</b> : (SM); light brown; dry; 20% silt, 80% medium grained sand; no plasticity; moderate to high estimated permeability.				15	
15-20			Moist.				20	
20-25			Grey; wet.	< 1.0			25	
25-30							30	
30-35							35	Bottom of boring

Driller <b>Gregg Drilling</b>	Development Yield <b>N/A</b>	Bentonite Seal <b>10' to 12'</b>
Logged By <b>Philip Gittens</b>	Well Casing <b>2"</b> Dia. <b>0'</b> to <b>14'</b>	Sand Pack <b>12' to 30'</b>
Drilling Started <b>10/2/96</b>	Casing Type <b>Schedule 40 PVC</b>	Sand Pack Type <b>#2/16 Sand</b>
Drilling Completed <b>10/2/96</b>	Well Screen <b>2"</b> Dia. <b>14'</b> to <b>29'</b>	Static Water Level <b>19.88</b> ft Depth
Construction Completed <b>10/2/96</b>	Screen Type <b>Schedule 40 PVC</b>	Date <b>10/28/96</b>
Development Completed <b>10/24/96</b>	Slot Size <b>0.010"</b>	Notes: <b>South side of 15th Street,</b>
Water Bearing Zones <b>N/A</b>	Drilling Mud <b>N/A</b>	<b>41' west of Harrison St.</b>
	Grout Type <b>Portland I/II</b>	

WELL 54188 12/11/96

**BORING LOG**

Boring ID **SB-0**

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

Location **1432 Harrison Street, Oakland, CA**

Project No: **54-188**

Phase

Task **015**

Surface Elev. **N/A ft.**

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

Depth (feet)	Blow Count	Sample Interval	Lithologic Description	TPH <sub>g</sub> (ppm)	Graphic Log	Boring Completion Graphics	Depth (feet)	Additional Comments
0			Ground Surface				0	
			Asphalt Cement					
			Silty SAND; (SM); orange/brown; damp; 20% silt, 80% medium grained sand; no plasticity; moderate to high estimated permeability.					
5							5	
10			Light brown.				10	
15							15	
			SAND; (SP); light brown; moist; 10% silt, 90% medium grained sand; non-plastic; high estimated permeability. Grey; 3% silt, 97% medium grained sand.					
20							20	
25			Wet.				25	
30			Grey/brown.				30	
				<1.0				
35							35	Bottom of boring

Driller <b>Gregg Drilling</b>	Drilling Started <b>10/3/96</b>	Notes: <b>East side of Harrison</b>
Logged By <b>Philip Gittens</b>	Drilling Completed <b>10/3/96</b>	<b>Street, 81' north of 14th Street.</b>
Water-Bearing Zones <b>N/A</b>	Grout Type <b>Portland I/II</b>	

**BORING LOG**

Boring ID **SB-P**

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

Location **1432 Harrison Street, Oakland, CA**


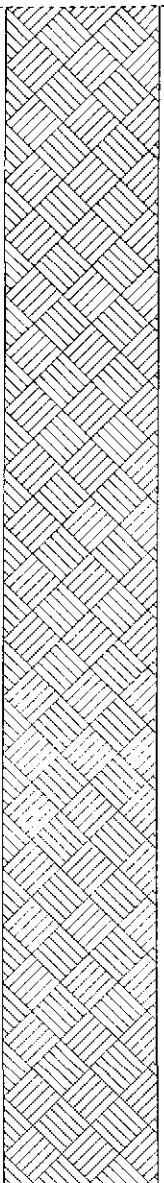
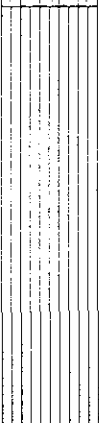
Project No: **54-188**

Phase

Task **015**

Surface Elev. **N/A 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	
Ground Surface								
			<b>Asphalt</b> <b>Cement</b>					
			<b>Silty SAND: (SM);</b> grey; damp; 20% silt, 80% medium grained sand; no plasticity; moderate to high estimated permeability.					
5				3.8			5	
			<b>Sandy SILT: (ML);</b> grey; damp; 10% clay, 60% silt, 30% medium grained sand; medium plasticity; low to moderate estimated permeability.					
10							10	
				1,500				
								Bottom of boring
15							15	

Driller <b>Gregg Drilling</b>	Drilling Started <b>10/3/96</b>	Notes: <b>Boring located beneath</b>
Logged By <b>Philip Gittens</b>	Drilling Completed <b>10/3/96</b>	<b>UST closed in place at 1425</b>
Water-Bearing Zones <b>N/A</b>	Grout Type <b>Portland I/II</b>	<b>Harrison St.</b>

BOR 54188 12/12/96

**BORING LOG**

Boring ID

**SB-Q**

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

Location **1432 Harrison Street, Oakland, CA**


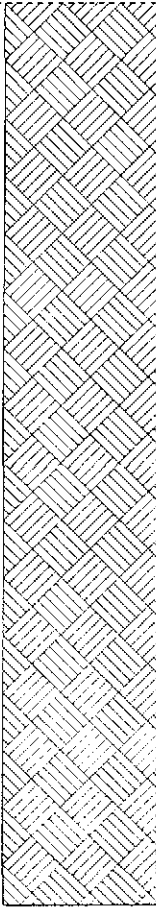

Project No: **54-188**

Phase

Task **015**

Surface Elev. **N/A 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	
			<b>Asphalt</b> <b>Cement</b>					
			<b>Silty SAND:</b> (SM); grey; damp; 20% silt, 80% medium grained sand; no plasticity; moderate to high estimated permeability.					
5				4.3			5	
			<b>Sandy SILT:</b> (ML); grey; damp; 10% clay, 60% silt, 30% medium grained sand; medium plasticity; low to moderate estimated permeability.					
10				1,900			10	
								Bottom of boring
15							15	

Driller <b>Gregg Drilling</b>	Drilling Started <b>10/3/96</b>	Notes: <b>Boring located beneath</b>
Logged By <b>Philip Gittens</b>	Drilling Completed <b>10/3/96</b>	<b>UST closed in place at 1425</b>
Water-Bearing Zones <b>N/A</b>	Grout Type <b>Portland I/II</b>	<b>Harrison St.</b>

BOR 54188 12/12/96

CAMBRIA

**Attachment C**

Analytic Results for Soil and Ground Water





## QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/03/96

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		
	Sample (#67152)	MS	MSD		MS	MSD	RPD
TPH (gas)	0.000	1.878	1.901	2.03	93	94	1.2
Benzene	0.000	0.184	0.186	0.2	92	93	1.1
Toluene	0.000	0.188	0.188	0.2	94	94	0.0
Ethylbenzene	0.000	0.182	0.184	0.2	91	92	1.1
Xylenes	0.000	0.540	0.552	0.6	90	92	2.2
TPH (diesel)	0	308	304	300	103	101	1.3
TRPH (oil and 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: 10/04/96

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		RPD
	Sample (#67147)	MS	MSD		MS	MSD	
TPH (gas)	0.000	1.769	1.795	2.03	87	88	1.5
Benzene	0.000	0.180	0.174	0.2	90	87	3.4
Toluene	0.000	0.182	0.176	0.2	91	88	3.4
Ethylbenzene	0.000	0.174	0.170	0.2	87	85	2.3
Xylenes	0.000	0.518	0.512	0.6	86	85	1.2
TPH (diesel)	0	304	305	300	101	102	0.1
TRPH (oil and grease)	0.0	21.0	20.0	20.8	101	96	4.9

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

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

## QC REPORT FOR ICP and/or AA METALS

Date: 10/05/96

Matrix: Soil

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	0.00	4.88	5.01	5.0	98	100	2.6
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

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

7334 AC 140

**McCAMPBELL ANALYTICAL**

110 2nd AVENUE, # D7

PACHECO, CA 94663

FAX (610) 700-1022

(610) 700-1020

**CHAIN OF CUSTODY RECORD**

TURN AROUND TIME:

RUSH  24 HOUR  48 HOUR  5 DAY

REPORT TO: PHILIP GITTENS BILL TO: CAMBRIA

COMPANY: CAMBRIA ENVIRONMENTAL

1144 65th St.

Oakland, CA 94608

TELE: 510-420-0700 FAX: 510-420-9170

PROJECT NUMBER: 54-188 PROJECT NAME: BORSUK-INVEST

PROJECT LOCATION: 1432 Harrison St. SAMPLER SIGNATURE: [Signature]

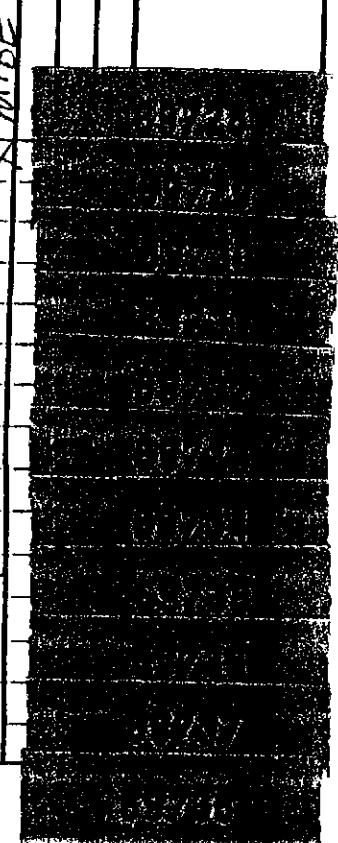
**ANALYSIS REQUEST**

**OTHER**

**COMMENTS**

SAMPLE ID	LOCATION	SAMPLING		# CONTAINERS	TYPE CONTAINERS	MATRIX					METHOD PRESERVED				
		DATE	TIME			WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO3	OTHER		
SB-M(5.0)		10/2/96	9:20A	1			X								
SB-M(10.0)			9:35A												
SB-M(15.0)			9:40A												
SB-M(20.0)			9:50A												
SB-M(25.0)			10:00A												
SB-N(5.0)			3:00P												
SB-N(10.0)			3:10P												
SB-N(15.0)			3:20P												
SB-N(20.0)			3:25P												
SB-N(25.0)			3:30P												
SB-N(29.0)			4:30P												

STEEL & TIN AS CONTAINER (402/8002) & 6002 (11/8)																			
TIN AS 2000 (8002)																			
Total Petroleum Oil & Grease (5002) (5002) (5002) (5002)																			
Total Petroleum Hydrocarbons (4183)																			
EPA 501/8002																			
EPA 502/8002																			
EPA 503/8002																			
EPA 504/8002 - PCBs Only																			
EPA 521/82-02-0205																			
EPA 522/8270																			
CAN - 17 Metals																			
EPA - Priority Pollutant Metals																			
LEAD (72407-02/2792/0010)																			
ORGANIC LEAD																			
PCB																			



RELEASISHED BY: <u>[Signature]</u>	DATE: <u>10/2/96</u>	TIME: <u>11:38</u>	RECEIVED BY: <u>[Signature]</u>
RELEASISHED BY:	DATE:	TIME:	RECEIVED BY:
RELEASISHED BY: <u>[Signature]</u>	DATE: <u>10/3/96</u>	TIME: <u>12:20</u>	RECEIVED BY: <u>[Signature]</u>

REMARKS: All Samples On Hold per P.G. 10/4/96. Samples Marked ⊗ OFF Hold 10/4 per P.G.







## QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/05/96

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		RPD
	Sample (#67147)	MS	MSD		MS	MSD	
TPH (gas)	0.000	1.796	1.840	2.03	88	91	2.4
Benzene	0.000	0.178	0.178	0.2	89	89	0.0
Toluene	0.000	0.180	0.182	0.2	90	91	1.1
Ethylbenzene	0.000	0.174	0.176	0.2	87	88	1.1
Xylenes	0.000	0.522	0.530	0.6	87	88	1.5
TPH (diesel)	0	300	302	300	100	101	0.8
TRPH (oil and 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: 10/07/96

Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#67147)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
TPH (gas)	0.000	1.980	1.903	2.03	98	94	3.9
Benzene	0.000	0.186	0.178	0.2	93	89	4.4
Toluene	0.000	0.202	0.194	0.2	101	97	4.0
Ethylbenzene	0.000	0.186	0.176	0.2	93	88	5.5
Xylenes	0.000	0.562	0.530	0.6	94	88	5.9
TPH (diesel)	0	309	299	300	103	100	3.3
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

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







NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

Santa Rosa Division  
3636 North Laughlin Road  
Suite 110  
Santa Rosa, CA 95403-8226  
Tel: (707) 526-7200  
Fax: (707) 541-2333

John Espinosa  
Cambria Env. Technology  
1144 65th Street  
Suite C  
Oakland, CA 94608

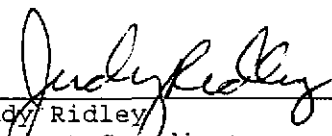
Date: 11/05/1996  
NET Client Acct. No: 98900  
NET Job No: 96.03087  
Received: 10/30/1996

Client Reference Information

Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel free to call me at (707) 541-2307.

Submitted by:

  
\_\_\_\_\_  
Judy Ridley  
Project Coordinator

Enclosure(s)

Client Name: Cambria Env. Technology  
Client Acct: 98900  
NET Job No: 96.03087

Date: 11/05/1996  
ELAP Cert: 1386  
Page: 2

Ref: Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

SAMPLE DESCRIPTION: MW4  
Date Taken: 10/28/1996  
Time Taken: 13:10  
NET Sample No: 269866

Parameter	Results	Flags	Reporting		Method	Date	Date	Run Batch No.
			Limit	Units		Extracted	Analyzed	
TPH (Gas/BTXE,Liquid)								
5030/MB015	--						11/04/1996	3751
DILUTION FACTOR*	100						11/04/1996	3751
as Gasoline	10		5.0	mg/L	5030		11/04/1996	3751
8020 (GC,Liquid)	--						11/04/1996	3751
Benzene	3,900		50	ug/L	8020		11/04/1996	3751
Toluene	420		50	ug/L	8020		11/04/1996	3751
Ethylbenzene	400		50	ug/L	8020		11/04/1996	3751
Xylenes (Total)	360		50	ug/L	8020		11/04/1996	3751
Methyl-tert-butyl ether	ND		200	ug/L	8020		11/04/1996	3751
SURROGATE RESULTS	--						11/04/1996	3751
Bromofluorobenzene (SURR)	101			% Rec.	5030		11/04/1996	3751

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Cambria Env. Technology  
Client Acct: 98900  
NET Job No: 96.03087

Date: 11/05/1996  
ELAP Cert: 1386  
Page: 3

Ref: Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

SAMPLE DESCRIPTION: MW5

Date Taken: 10/28/1996

Time Taken: 12:50

NET Sample No: 269867

Parameter	Results	Flags	Reporting			Date	Date	Run
			Limit	Units	Method	Extracted	Analyzed	Batch
								No.
TPH (Gas/BTEX, Liquid)								
5030/M8015	--						11/04/1996	3751
DILUTION FACTOR*	1						11/04/1996	3751
as Gasoline	0.09		0.050	mg/L	5030		11/04/1996	3751
8020 (GC, Liquid)	--						11/04/1996	3751
Benzene	4.0		0.50	ug/L	8020		11/04/1996	3751
Toluene	0.6		0.50	ug/L	8020		11/04/1996	3751
Ethylbenzene	ND		0.50	ug/L	8020		11/04/1996	3751
Xylenes (Total)	ND		0.50	ug/L	8020		11/04/1996	3751
Methyl-tert-butyl ether	16		2.0	ug/L	8020		11/04/1996	3751
SURROGATE RESULTS	--						11/04/1996	3751
Bromofluorobenzene (SURR)	101			% Rec.	5030		11/04/1996	3751

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Cambria Env. Technology  
Client Acct: 98900  
NET Job No: 96.03087

Date: 11/05/1996  
ELAP Cert: 1386  
Page: 4

Ref: Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

SAMPLE DESCRIPTION: MW6

Date Taken: 10/28/1996

Time Taken: 12:25

NET Sample No: 269868

Parameter	Results	Flags	Reporting			Date	Date	Run
			Limit	Units	Method	Extracted	Analyzed	Batch No.
TPH (Gas/BTXE,Liquid)								
5030/M8015	--						11/04/1996	3751
DILUTION FACTOR*	1						11/04/1996	3751
as Gasoline	ND		0.050	mg/L	5030		11/04/1996	3751
8020 (GC,Liquid)	--						11/04/1996	3751
Benzene	ND		0.50	ug/L	8020		11/04/1996	3751
Toluene	ND		0.50	ug/L	8020		11/04/1996	3751
Ethylbenzene	ND		0.50	ug/L	8020		11/04/1996	3751
Xylenes (Total)	ND		0.50	ug/L	8020		11/04/1996	3751
Methyl-tert-butyl ether	ND		2.0	ug/L	8020		11/04/1996	3751
SURROGATE RESULTS	--						11/04/1996	3751
Bromofluorobenzene (SURR)	98			% Rec.	5030		11/04/1996	3751

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Cambria Env. Technology  
Client Acct: 98900  
NET Job No: 96.03087

Date: 11/05/1996  
ELAP Cert: 1386  
Page: 5

Ref: Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

## CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV	CCV	CCV	Flags	Units	Date Analyzed	Analyst Initials	Run Batch Number
	Standard % Recovery	Standard Amount Found	Standard Amount Expected					
TPH (Gas/BTEX,Liquid)								
as Gasoline	103.8	0.519	0.50		mg/L	11/04/1996	cjy	3751
Benzene	105.2	21.03	20.0		ug/L	11/04/1996	cjy	3751
Toluene	105.0	20.99	20.0		ug/L	11/04/1996	cjy	3751
Ethylbenzene	104.3	20.85	20.0		ug/L	11/04/1996	cjy	3751
Xylenes (Total)	103.8	62.26	60.0		ug/L	11/04/1996	cjy	3751
Methyl-tert-butyl ether	91.6	73.30	80.0		ug/L	11/04/1996	cjy	3751
Bromofluorobenzene (SURR)	100.0	100	100		% Rec.	11/04/1996	cjy	3751

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Cambria Env. Technology  
Client Acct: 98900  
NET Job No: 96.03087

Date: 11/05/1996  
ELAP Cert: 1386  
Page: 6

Ref: Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

## METHOD BLANK REPORT

Parameter	Method	Reporting	Flags	Units	Date	Analyst	Run
	Blank						
	Found						Number
TPH (Gas/BTXE,Liquid)							
as Gasoline	ND	0.050		mg/L	11/04/1996	cjy	3751
Benzene	ND	0.50		ug/L	11/04/1996	cjy	3751
Toluene	ND	0.50		ug/L	11/04/1996	cjy	3751
Ethylbenzene	ND	0.50		ug/L	11/04/1996	cjy	3751
Xylenes (Total)	ND	0.50		ug/L	11/04/1996	cjy	3751
Methyl-tert-butyl ether	ND	2.0		ug/L	11/04/1996	cjy	3751
Bromofluorobenzene (SRR)	101			% Rec.	11/04/1996	cjy	3751

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.

Client Name: Cambria Env. Technology  
 Client Acct: 98900  
 NET Job No: 96.03087

Date: 11/05/1996  
 ELAP Cert: 1386  
 Page: 7

Ref: Mark Borsuk 1432 Harrison St., Oakland, CA/961028-K2

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike				Sample Conc.	Matrix Spike		Flags	Units	Date Analyzed	Run Batch	Sample Spiked
	Spike % Rec.	Dup % Rec.	RPD	Spike Amount		Spike Conc.	Dup. Conc.					
TPH (Gas/BTXE,Liquid)												269870
as Gasoline	101.4	100.8	0.6	0.50	ND	0.507	0.504		mg/L	11/04/1996	3751	269870
Benzene	95.7	90.8	5.3	9.20	ND	8.80	8.35		ug/L	11/04/1996	3751	269870
Toluene	98.9	97.8	1.1	43.93	ND	43.43	42.98		ug/L	11/04/1996	3751	269870
Bromofluorobenzene (SURR)	103.0	101.0	2.0	100	90	103	101		% Rec.	11/04/1996	3751	269870

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



## KEY TO RESULT FLAGS

- \* : RPD between sample duplicates exceeds 30%.
- \*M : RPD between sample duplicates or MS/MSD exceeds 20%.
- + : Correlation coefficient for the Method of Standard Additions is less than 0.995.
- < : Sample result is less than reported value.
- B-I : Value is between Method Detection Limit and Reporting Limit.
- B-O : Analyte found in blank and sample.
- C : The result confirmed by secondary column or GC/MS analysis.
- CNA : Cr+6 not analyzed; Total Chromium concentration below Cr+6 regulatory level.
- COMP : Sample composited by equal volume prior to analysis.
- D- : The result has an atypical pattern for Diesel analysis.
- D1 : The result for Diesel is an unknown hydrocarbon which consists of a single peak.
- DH : The result appears to be a heavier hydrocarbon than Diesel.
- DL : The result appears to be a lighter hydrocarbon than Diesel.
- DR : Elevated Reporting Limit due to Matrix.
- DS : Surrogate diluted out of range.
- DX : The result for Diesel is an unknown hydrocarbon which consists of several peaks.
- FA : Compound quantitated at a 2X dilution factor.
- FB : Compound quantitated at a 5X dilution factor.
- FC : Compound quantitated at a 10X dilution factor.
- FD : Compound quantitated at a 20X dilution factor.
- FE : Compound quantitated at a 50X dilution factor.
- FF : Compound quantitated at a 100X dilution factor.
- FG : Compound quantitated at a 200X dilution factor.
- FH : Compound quantitated at a 500X dilution factor.
- FI : Compound quantitated at a 1000X dilution factor.
- FJ : Compound quantitated at a greater than 1000x dilution factor.
- FK : Compound quantitated at a 25X dilution factor.
- FL : Compound quantitated at a 250X dilution factor.
- G- : The result has an atypical pattern for Gasoline.
- G1 : The result for Gasoline is an unknown hydrocarbon which consists of a single peak.
- GH : The result appears to be a heavier hydrocarbon than Gasoline.
- GL : The result appears to be a lighter hydrocarbon than Gasoline.
- GX : The result for Gasoline is an unknown hydrocarbon which consists of several peaks.
- HT : Analysis performed outside of the method specified holding time.
- HTC : Confirmation analyzed outside of the method specified holding time.
- HTP : Prep procedure performed outside of the method specified holding time.
- HTR : Received after holding time expired, analyzed ASAP after receipt.
- HX : Peaks detected within the quantitation range do not match standard used.
- J : Value is estimated.
- MI : Matrix Interference Suspected.
- MSA : Value determined by Method of Standard Additions.
- MSA\* : Value obtained by Method of Standard Additions; Correlation coefficient is <0.995.
- NI1 : Sample spikes outside of QC limits; matrix interference suspected.
- NI2 : Sample concentration is greater than 4X the spiked value; the spiked value is considered insignificant.
- NI3 : Matrix Spike values exceed established QC limits, post digestion spike is in control.
- P : There is >40% difference between primary and confirmation analysis.
- P7 : pH of sample > 2; sample analyzed past 7 days.
- RSC : Refer to subcontract laboratory report for QC data.
- S2 : Matrix interference confirmed by repeat analysis.
- SCN : Thiocyanate not analyzed separately; total value is below the Reporting Limit for Free Cyanide.
- UMDL : Undetected at the Method Detection Limit.

# BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE  
SAN JOSE, CA 95133  
(408) 995-5535  
FAX (408) 293-8773

#3256

## CONDUCT ANALYSIS TO DETECT

LAB Not

DHS # \_\_\_\_\_

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

EPA

RWQCB REGION \_\_\_\_\_

LIA

OTHER

### CHAIN OF CUSTODY

961028-102  
CLIENT Cambria Environmental  
SITE MARK BOESCH  
1432 HARRISON ST.  
OAKLAND, CA.

C = COMPOSITE ALL CONTAINERS

TANKS, BLUE MPE

SPECIAL INSTRUCTIONS Invoice of Report  
to Cambria Environmental  
ATTN: John Espinosa  
(510) 420-0700

SAMPLE I.D.		MATRIX		CONTAINERS		ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
		S = SOIL W = H2O	TOTAL						
<u>NW4</u>	<u>1310</u>	<u>W</u>	<u>3</u>	<u>VOA</u>	<u>XXX</u>				
<u>NW5</u>	<u>1250</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>XXX</u>				
<u>NW6</u>	<u>1225</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>XXX</u>				

CUSTODY SEALED

Date 10/29/96 Time 12:33 Initials CS

SEAL INTACT?

Yes

No

Initials B

SAMPLING COMPLETED DATE 10/28/96 TIME 1320 SAMPLING PERFORMED BY Keith Brown RESULTS NEEDED NO LATER THAN Standard

RELEASED BY [Signature] DATE 10/29/96 TIME 1335 RECEIVED BY [Signature] DATE 10/29/96 TIME 1335

RELEASED BY [Signature] DATE 10/29/96 TIME 12:33 RECEIVED BY [Signature] DATE 10/30/96 TIME 08:15

RELEASED BY \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_ RECEIVED BY \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_

SHIPPED VIA NCS DATE SENT \_\_\_\_\_ TIME SENT \_\_\_\_\_ COOLER # \_\_\_\_\_

CAMBRIA

**Attachment D**

Well Installation Permits



CITY OF OAKLAND



OFFICE OF PLANNING & BUILDING • 1330 BROADWAY • OAKLAND, CALIFORNIA 94612

Administration	238-7200	Building Services	238-3587	Planning	238-3941
Engineering Services	238-2110	Operations	238-3443	Zoning	238-7206

October 21, 1996

Alvin H. Bacharach and Barbara Jean Borsuk  
C/O Philip T. Gittens  
Cambria Environmental Technology, Inc.  
1144-65th Street, Suite C  
Oakland, CA 94608

Dear Mr. Bacharach and Ms. Borsuk :

**RE: MINOR ENCROACHMENT PERMIT FOR MONITORING WELLS IN HARRISON AND 15TH STREETS, OAKLAND**

Enclosed are the Minor Encroachment Permit and Agreement and the Conditions For Granting a Minor Encroachment Permit allowing you to place two monitoring wells within the public right-of-way area of Harrison Street and one monitoring well in the public right-of-way of 15th Street.

Before the permit will become effective, however, it must be signed by the person(s) having the legal authority to do so, properly notarized with notary acknowledgement slip(s) attached, and returned to this office to the attention of Albert Hall for recordation.

You must also obtain a street excavation permit from the Engineering Information Counter, 2nd Floor, 1330 Broadway, prior to the start of the proposed work in the City right of way. For questions regarding the street excavation permit, call the Engineering Information Counter at (510) 238-4777 between 8 a.m. and 4 p.m., Monday through Friday.

If you have any other questions regarding this minor encroachment permit, please call Albert Hall at (510) 238-3238.

Very truly yours,

CALVIN N. WONG  
Chief of Building Services

By *Philip A. Grubstick*

PHILIP A. GRUBSTICK  
Engineering Services Manager

Enclosures

:ah

Recording requested by:  
City of Oakland

When Recorded Mail to:  
City of Oakland  
Community & Econ. Develop. Agency  
Building Services, Eng. info.  
1330 Broadway, 2nd Floor  
Oakland, CA 94612

TAX ROLL PARCEL NUMBER  
(ASSESSOR'S REFERENCE NUMBER)

008	626	23	--
MAP	BLOCK	PARCEL	SUB

SPACE ABOVE FOR RECORDER'S USE ONLY

Address: 1432 Harrison Street, Oakland

**MINOR ENCROACHMENT PERMIT AND AGREEMENT**

Alvin H. Bacharach and Barbara Jean Borsuk are hereby granted a Conditional Revocable Permit to encroach into the public right-of-way area of Harrison and 15th Streets, Oakland with three monitoring wells. The location of said encroachment shall be as delineated in Exhibit 'A' attached hereto and made a part hereof.

The permittee agrees to comply with and be bound by the conditions for granting an Encroachment Permit attached hereto and made a part hereof.

This agreement shall be binding upon the permittee described above, and their successors in interest thereof.

In witness whereof, we have set our signature this \_\_\_\_\_ day of \_\_\_\_\_, 1996.

\_\_\_\_\_  
Alvin H. Bacharach

\_\_\_\_\_  
Barbara Jean Borsuk

-----  
BELOW FOR OFFICIAL USE ONLY

CITY OF OAKLAND

Dated \_\_\_\_\_

By: \_\_\_\_\_  
CALVIN N. WONG  
Chief of Building Services  
For  
KOFI BONNER  
Director of Community &  
Economic Development Agency

TO: Alvin H. Bacharach and Barbara Jean Borsuk  
(APN:008-626-23)

Address: 1432 Harrison Street

RE: Minor Encroachment Permit for Monitoring Wells in  
Harrison and 15th Streets, Oakland

**CONDITIONS FOR GRANTING A MINOR ENCROACHMENT PERMIT**

1. That this permit shall be revocable at the pleasure of the Chief of Building Services.
2. That the permittee, by the acceptance, either expressed or implied, of the minor encroachment permit hereby disclaims any right, title, or interest in or to any portion of the public sidewalk or street area, and agrees that said temporary use of said area does not constitute an abandonment on the part of the City of Oakland of any of its rights for street purposes and otherwise.
3. The permittee shall maintain in force and effect at all times that said encroachment occupies said public sidewalk or street area, good and sufficient public liability insurance in the amount of \$300,000 for each occurrence, and property damage insurance in the amount of \$50,000 for each occurrence, both including contractual liability insuring the City of Oakland against any and all claims arising out of the existence of said encroachment in said public sidewalk or street area, and that a certificate of such insurance and subsequent notices of the renewal thereof, shall be filed with the Chief of Building Services of the City of Oakland, and that such certificate shall state that said insurance coverage shall not be canceled or be permitted to lapse without thirty (30) days written notice to said Chief of Building Services. The Permittee also agrees that the City may review the type and amount of insurance required of the Permittee every five (5) years and may require the permittee to increase the amount of and/or change the type of insurance coverage required.
4. That the permittee, by the acceptance, either expressed or implied, of this revocable permit shall be solely and fully responsible for the repair or replacement of any portion or all of said improvements in the event that said improvements shall have failed or have been damaged to the extent of creating a menace or of becoming a hazard to the safety of the general public; and that the permittee shall be liable for the expenses connected therewith.

5. That upon the termination of the permission herein granted, permittee shall immediately remove said encroachment from the sidewalk and street area, and any damage resulting therefrom shall be repaired to the satisfaction of the Chief of Building Services.
6. That the permittee shall file with the City of Oakland for recordation a Minor Encroachment Permit and Agreement, and shall be bound by and comply with all the terms and conditions of said permit.
7. That said permittee shall obtain an excavation permit prior to the construction and a separate excavation permit prior to the removal of the ground water monitoring wells.
8. That said permittee shall provide to the City of Oakland an AS BUILT plan showing the actual location of the ground water monitoring wells and the results of all data collected from the monitoring wells.
9. That said permittee shall remove the monitoring wells and repair any damage to the sidewalk or street area in accordance with City standards two (2) years after construction or as soon as monitoring is complete.
10. That said permittee shall notify the Office of Planning & Building after the monitoring well(s) is/are removed and the sidewalk or street area restored to initiate the procedure to rescind the minor encroachment permit.
11. That monitoring well covers installed within the sidewalk area shall have a skidproof surface. A precast concrete utility box may be used in conjunction with the bolted cast iron cover with City approval.
12. That the ground water monitoring well casting and cover shall be cast iron and shall meet H-20 load rating. The cover shall be secured with a minimum of two stainless steel bolts. Bolts and cover shall be mounted flush with the surrounding surface.
13. That the permittee acknowledges that the City makes no representations or warranties as to the conditions beneath said encroachment. By accepting this revocable permit, permittee agrees that it will use the encroachment area at its own risk, is responsible for the proper coordination of its activities with all other permittees, underground utilities, contractors, or workmen operating within the encroachment area and for the safety of itself and any of its personnel in connection with its entry under this revocable permit.
14. That the permittee acknowledges that the City is unaware of the existence of any hazardous substances beneath the

encroachment area, and hereby waives and fully releases and forever discharges the City and its officers, director, chiefs, employees, agents, servants, representatives, assigns and successors from any and all claims, demands, liabilities, damages, actions, causes of action, penalties, fines, liens, judgments, costs, or expenses whatsoever (including, without limitation, attorneys' fees and costs), whether direct or indirect, known or unknown, foreseen or unforeseen, that may arise out of or in any way connected with the physical condition, or required remediation of the excavation area or any law or regulation applicable thereto, including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Sections 9601 et seq.), the Resource Conservation and Recovery Act of 1976 (42 U.S.C. Section 6901 et seq.), the Clean Water Act (33 U.S.C. Section 466 et seq.), the Safe Drinking Water Act (14 U.S.C. Sections 1401-1450), the Hazardous Materials Transportation Act (49 U.S.C. Section 1801 et seq.), the Toxic Substance Control Act (15 U.S.C. Sections 2601-2629), the California Hazardous Waste Control Law (California Health and Safety Code Sections 25100 et seq.), the Porter-Cologne Water Quality Control Act (California Health and Safety Code Section 13000 et seq.), the Hazardous Substance Account Act (California Health and Safety Code Section 25300 et seq.), and the Safe Drinking Water and Toxic Enforcement Act (California Health and Safety Code Section 25249.5 et seq.).

15. Permittee further acknowledges that it understands and agrees that it hereby expressly waives all rights and benefits which it now has or in the future may have, under and by virtue of the terms of California Civil Code Section 1542, which reads as follows: "A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR."
16. Permittee recognizes that by waiving the provisions of this section, permittee will not be able to make any claims for damages that may exist, and to which, if known, would materially affect his/her decision to execute this encroachment agreement, regardless of whether permittee's lack of knowledge is the result of ignorance, oversight, error, negligence, or any other cause.
17. (a) That the permittee, by the acceptance of this revocable permit, agrees and promises to indemnify, defend, and hold harmless the City of Oakland, its officers, agents, and employees, to the maximum extent permitted by law, from any and all claims, demands, liabilities, damages, actions, causes of action, penalties, fines, liens, judgments, costs, or expenses whatsoever (including, without limitation, attorneys' fees and costs;

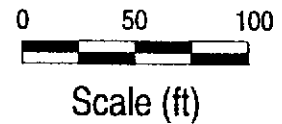
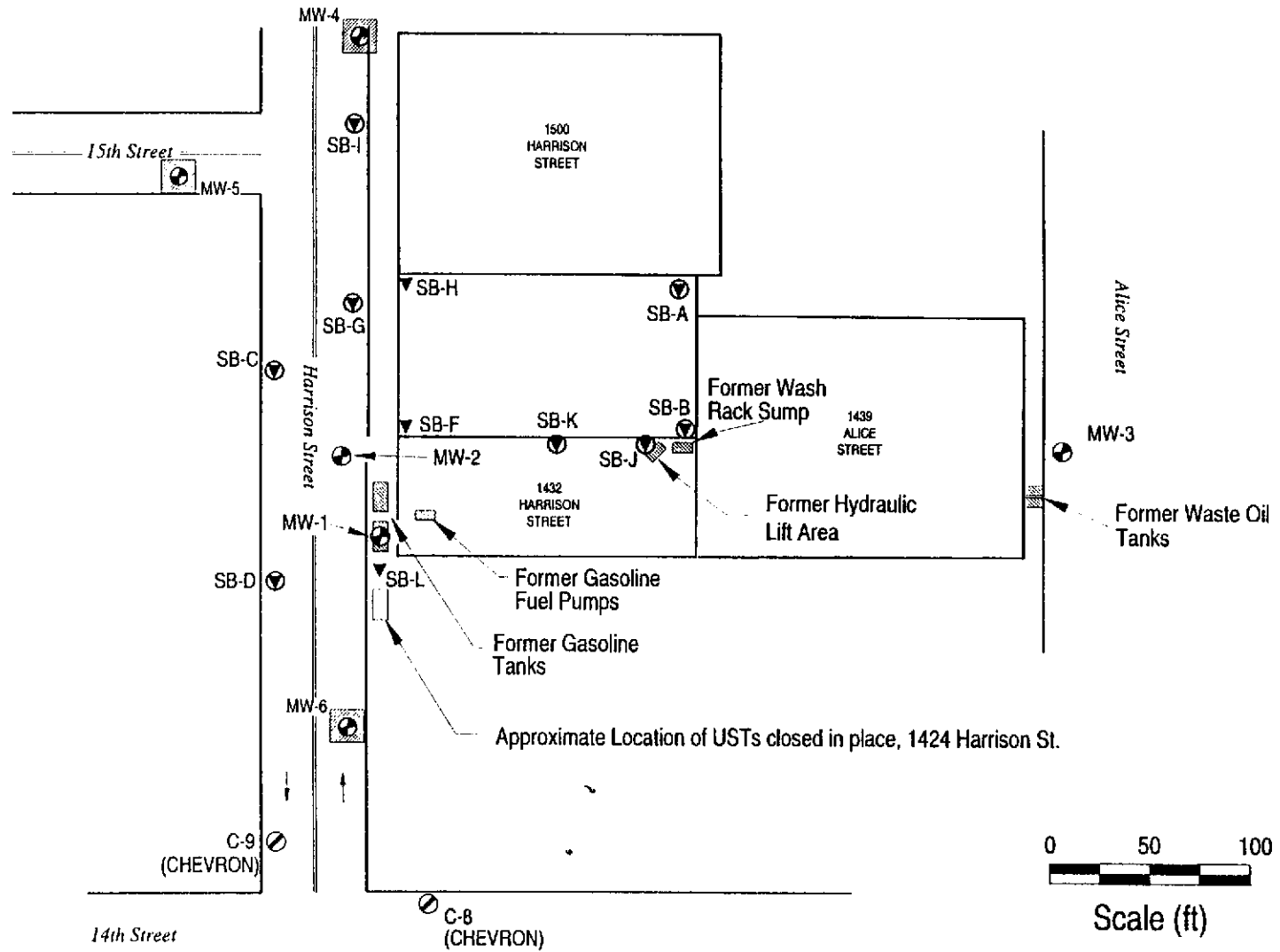


collectively referred to as "claims"), whether direct or indirect, known or unknown, foreseen or unforeseen, to the extent that such claims were caused by the permittee, its agents, employees, contractors or representatives.

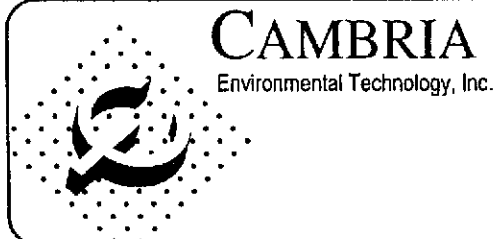
- (b) That, if any contamination is discovered below or in the immediate vicinity of the encroachment, and the contaminants found are of the type used, housed, stored, processed or sold on or from the Harrison Street, Oakland, California site, such shall amount to a rebuttable presumption that the contamination below, or in the immediate vicinity of, the encroachment was caused by the permittee, its agents, employees, contractors or representatives.
  - (c) That the permittee shall comply with all applicable federal, state, county and local laws, rules, and regulations governing the installation, maintenance, operation and abatement of the encroachment.
  - (d) That the permittee hereby does remise, release, and forever discharge, and agree to defend, indemnify and save harmless, the City, its officers, agents and employees and each of them, from any and all actions, claims, and demands of whatsoever kind or nature, and any damage, loss or injury which may be sustained directly or by the undersigned and any other person or persons, and arising out of, or by reason of, the occupation of said public property, and the future removal of the above-mentioned encroachment.
18. That the hereinabove conditions shall be binding upon the permittee and the successive owners and assigns thereof.
19. That said Minor Encroachment Permit and Agreement shall take effect when all the conditions hereinabove set forth shall have been complied with to the satisfaction of the Chief of Building Services, and shall become null and void upon the failure of the permittee to comply with all conditions hereinabove set forth.

EXHIBIT "A"

Approximate  
Groundwater  
Flow Direction



D:\PROJECT\SB2004\OAKL-188\PROP\BOR.DWG



EXPLANATION

- Previously Installed Ground Water Monitoring Well
- Chevron Ground Water Monitoring Well
- Soil Sample Location (7/95)
- Grab Ground Water Sample Location (7/95)
- Proposed Monitoring Well Location

Proposed Monitoring Well Locations

1432 Harrison Street  
Oakland, California

FIGURE

2

Sep-16-96 12:20P

P. 01



# ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600  
FAX (510) 462-3914

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT In the street near  
the intersection of Harrison and 15th  
Streets, OAKLAND

PERMIT NUMBER 96703  
LOCATION NUMBER \_\_\_\_\_

CLIENT  
Name Barbara Jean Fox and Alvin H. Bacharach  
Address 4017 Sugar Maple Dr. Voice \_\_\_\_\_  
City Danville Zip 94526

### PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT  
Name Cambria Environmental Tech  
PHILIP GIBENS Fax 510-420-9170  
Address 1144 65th St, Suite C Voice 510-420-0700  
City Oakland 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 _____
Monitoring <u>X</u>	Well Destruction _____

### PROPOSED WATER SUPPLY WELL USE

Domestic _____	Industrial _____	Other _____
Municipal _____	Irrigation _____	

### DRILLING METHOD:

Mud Rotary _____	Air Rotary _____	Auger _____
Cable _____	Other _____	

DRILLER'S LICENSE NO. C57-485165

### WELL PROJECTS

Drill Hole Diameter	<u>8</u> in.	Maximum	
Casing Diameter	<u>2</u> in.	Depth	<u>30</u> ft.
Surface Seal Depth	<u>5</u> ft.	Number	<u>3</u>

### GEOTECHNICAL PROJECTS

Number of Borings	<u>6</u>	Maximum	
Hole Diameter	<u>8</u> in.	Depth	<u>30</u> ft.

ESTIMATED STARTING DATE 10/2/96

ESTIMATED COMPLETION DATE 10/3/96

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

Approved Wyman Hong Date 1 Oct 96  
Wyman Hong

APPLICANT'S SIGNATURE [Signature] Date 9/16/96



# EXCAVATION PERMIT

## TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL  
ENGINEERING

PAGE 2 of 2

PERMIT NUMBER <b>X9600741</b>		SITE ADDRESS/LOCATION <b>1432 Harrison St</b>
APPROX. START DATE	APPROX. END DATE	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number)
CONTRACTOR'S LICENSE # AND CLASS <b>485165</b>		CITY BUSINESS TAX #

**ATTENTION:**

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* 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):

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).

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 appurtenances thereto, (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).

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).

I am exempt under Sec. \_\_\_\_\_, B&PC for this reason \_\_\_\_\_.

**WORKER'S COMPENSATION**

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 \_\_\_\_\_

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]* \_\_\_\_\_ Date **9-13-96**

Signature of Permittee  Agent for  Contractor  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 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>[Signature]</i>		DATE ISSUED <b>9-13-96</b>	



# EXCAVATION PERMIT

## TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL  
ENGINEERING

PAGE 2 of 2

PERMIT NUMBER <b>X9600742</b>		SITE ADDRESS/LOCATION <b>300 15th St</b>	
APPROX. START DATE	APPROX. END DATE	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number)	
CONTRACTOR'S LICENSE # AND CLASS <b>485165</b>		CITY BUSINESS TAX #	
ATTENTION:			
1) State law requires that the contractor/owner call <i>Underground Service Alert (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) <b>48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.</b>			
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 appurtenances thereto, (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 		Date <b>9-13-96</b>	
<input checked="" type="checkbox"/> Agent for <input checked="" 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 type="checkbox"/> YES <input checked="" type="checkbox"/> NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
ISSUED BY 		DATE ISSUED <b>9-13-96</b>	

CAMBRIA

**Attachment E**

Standard Field Procedures

## STANDARD FIELD PROCEDURES

This document describes standard field methods for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. 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 or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG).

#### Soil Boring and Sampling

Soil borings are typically drilled using solid flight or hollow-stem augers. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using split-barrel samplers lined with steam-cleaned brass or stainless steel tubes that are driven through the hollow auger stem into undisturbed sediments at the bottom of the borehole. Samples are driven using a 140 pound hammer dropped 30 inches.

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 Analysis

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labelled 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 stratigraphy and ground water depth to select soil samples for analysis.

## 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. If wells are completed in the borings, the well installation, development and sampling procedures summarized below are followed.

## MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

### Well Construction and Surveying

Wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

### Well Development

Wells are generally developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.



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All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

## Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labelled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

CAMBRIA

**Attachment F**

Survey Report

**L. WADE HAMMOND**  
*Land Surveyor*  
6310 THORNTON AVENUE  
NEWARK, CA 94560  
Tel: 510-796-2624 FAX 510-790-2650

October 18, 1996

**Cambria Environmental Technology, Inc.**

**Attn: John Espinoza**

1144 65th St. Suite C

Oakland, CA 94608

Tel: 510-420-0700 Fax: 510-420-9170

**Subject: 1432 Harrison St. Oakland**

Dear Mr. Espinoza:

I have completed the well elevation survey at the above site.

The results are as follows:

<u>Well</u>	<u>Top PVC Casing Elevation</u>	<u>Rim Elevation</u>
MW-4	30.77	31.22
MW-5	31.61	32.09
MW-6	32.89	33.25

**Benchmark: City of Oakland #3893 - Cut Square at the mid point of the return  
at the southwest corner of 17th and Harrison st.  
Elevation: 29.25 City of Oakland 1929 NGVD**

Very truly,



**L. Wade Hammond PLS**

CAMBRIA

**Attachment G**

Well Development and Sampling Data



# WELL MONITORING DATA SHEET

Project #: <u>981028-K2</u>	Client: <u>Mark</u>
Sampler: <u>KCB</u>	Start Date: <u>10/28</u>
Well I.D.: <u>NW4</u>	Well Diameter: (circle one) <u>2</u> 3 4 6
Total Well Depth: _____	Depth to Water: _____
Before <u>2452</u> After _____	Before <u>1932</u> After _____
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Measurements referenced to: <u>VVC</u>	Grade _____ Other: _____

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

<u>0.8</u>	<u>x</u>	<u>3</u>	<u>=</u>	<u>2.4</u>	
1 Case Volume		Specified Volumes		gallons	

Purging: Bailer _____ Disposable Bailer <input checked="" type="checkbox"/> Middleburg _____ Electric Submersible _____ Extraction Pump _____ Other _____	Sampling: Bailer _____ Disposable Bailer <input checked="" type="checkbox"/> Extraction Port _____ Other _____
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TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>1259</u>	<u>70.4</u>	<u>7.2</u>	<u>1200</u>	<u>200</u>	<u>1.0</u>	<u>gray-silty</u>
<u>1302</u>	<u>71.2</u>	<u>6.8</u>	<u>1000</u>	<u>200</u>	<u>2.0</u>	
<u>1304</u>	<u>70.8</u>	<u>7.0</u>	<u>1000</u>	<u>200</u>	<u>2.5</u>	

Did Well Dewater?  If yes, gals. ← Gallons Actually Evacuated: 25

Sampling Time: 1310 Sampling Date: 10/28

Sample I.D.: NW4 Laboratory: NCA

Analyzed for: TPH-G  BTEX  TPH-D  OTHER: XUTBIE

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: TPH-G BTEX TPH-D OTHER: \_\_\_\_\_

# WELL MONITORING DATA SHEET

Project #: <u>961028-102</u>	Client: <u>Mark Borsile</u>
Sampler: <u>KOB</u>	Start Date: <u>10/28</u>
Well I.D.: <u>NW6</u>	Well Diameter: (circle one) <u>(2)</u> 3 4 6
Total Well Depth: Before <u>2843</u> After	Depth to Water: Before <u>2002</u> After
Depth to Free Product: <u>    </u>	Thickness of Free Product (feet):
Measurements referenced to: <u>(PVC)</u>	Grade Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

<u>1.3</u>	x	<u>3</u>	=	<u>3.9</u>
1 Case Volume		Specified Volumes		gallons

Purgging: Bailer Disposable Bailer ✓ Middleburg Electric Submersible Extraction Pump Other _____	Sampling: Bailer Disposable Bailer ✓ Extraction Port Other _____
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TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>1217</u>	<u>20.8</u>	<u>7.2</u>	<u>1000</u>	<u>low</u>	<u>1.5</u>	<u>silty-tan</u>
<u>1219</u>	<u>71.0</u>	<u>7.1</u>	<u>1000</u>	<u>low</u>	<u>3.0</u>	
<u>1222</u>	<u>20.4</u>	<u>7.1</u>	<u>1000</u>	<u>low</u>	<u>4.0</u>	

Did Well Dewater? N If yes, gals. \_\_\_\_\_ Gallons Actually Evacuated: 4.0

Sampling Time: 1225 Sampling Date: 10/28

Sample I.D.: NW6 Laboratory: NCC

Analyzed for: (TPH-G) (BTEX) TPH-D (OTHER)  
ACTBE

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: TPH-G BTEX TPH-D OTHER:  
 (Circle)

# WELL DEVELOPMENT DATA SHEET

Project #: <u>061024-172</u>	Client: <u>MARK TORSLIK</u>
Developer: <u>MD</u>	Date Developed: <u>10-24-96</u>
Well I.D.: <u>4</u>	Well Diameter: (circle one) <u>2</u> 3 4 6
Total Well Depth: Before <u>24.78</u> After <u>24.84</u>	Depth to Water: Before <u>19.25</u> After <u>18.96</u> <span style="font-size: 2em; vertical-align: middle;">↑</span>
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Correction Factor (VCF):	Well dia. VCF
$(2 + (d^2/4)) \cdot 0.738$	2" = 1.14
Where:	3" = 1.17
$d = \text{inches}$	4" = 1.24
$d = \text{diameter (in)}$	6" = 1.47
$n = 1.345$	8" = 1.68
$22 = \text{inches}$	12" = 1.97

$$\frac{.9}{1 \text{ Case Volume}} \times \frac{10}{\text{Specified Volumes}} = \frac{2}{\text{gallons}}$$

Purging Device: Bailor  Electric Submersible   
 Middleburg  Suction Pump

Type of Installed Pump \_\_\_\_\_

Other equipment used \_\_\_\_\_

TIME	TEMP. (F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
1300	68.0	7.2	1400	> 200	1	START @ 12:58
1302	68.8	7.2	1300	> 200	2	ODOR / GRAY
1304	69.2	7.1	1200	> 200	3	1 GPM
1306	68.8	7.0	1200	> 200	4	GOOD RECHARGE
1308	68.6	7.0	1200	> 200	5	
1310	68.6	7.0	1200	> 200	6	
1312	68.8	7.0	1200	> 200	7	ODOR
1314	68.8	6.9	1100	> 200	8	CLEARING
1316	68.6	6.9	1200	> 200	8.5	
1318	68.6	7.0	1200	> 200	9.0	

Did Well De-water?  If yes, note above. Gallons Actually Evacuated: 90



# WELL DEVELOPMENT DATA SHEET

Project #: <u>961024-D2</u>	Client: <u>MARK BERSUK</u>
Developer: <u>MD</u>	Date Developed: <u>10-24-96</u>
Well I.D.: <u>7W-5</u>	Well Diameter: (circle one) <u>2</u> 3 4 6
Total Well Depth: Before <u>28.75</u> After <u>28.89</u>	Depth to Water: Before <u>19.85</u> After <u>1.19.72</u>
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Calculated From (VCF):	Well dia.	VCF
(3.14 x (d <sup>2</sup> /4) x h) / 2.31	2"	0.04
	3"	0.07
	4"	0.14
	6"	0.34
	8"	0.60
	10"	0.98
	12"	1.36

$$\frac{1.4}{1 \text{ Case Volume}} \times \frac{170}{\text{Specified Volumes}} = \frac{14.0}{\text{gallons}}$$

Purging Device: Bailer  Middleburg  Electric Submersible  Suction Pump

Type of Installed Pump \_\_\_\_\_

Other equipment used \_\_\_\_\_

TIME	TEMP. (°F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
						START @ 1328
1330	69.0	7.4	1600	>200	1.5	1.0M
1332	68.6	7.3	1500	>200	3.0	SILTY
1334	68.8	7.2	1200	700	4.5	
1336	69.0	7.0	1100	>200	6.0	
1338	68.4	7.1	1000	>200	7.5	Cleaning
1340	68.6	7.0	980	>200	9.0	
1342	68.6	7.0	960	162.4	10.5	GOOD RECHARGE
1344	68.6	7.0	940	84.2	12.0	Clean
1346	68.6	7.0	920	56.0	13.0	
1348	68.6	7.0	920	54.3	14.0	

Did Well Dewater?  If yes, note above. Gallons Actually Evacuated: 140