

December 27, 1996

Jon Legallet
Telegraph Business Properties
1401 Griffith Street
San Francisco, CA 94124

Re: Subsurface Investigation Report
Telegraph Business Park
5427 Telegraph Avenue
Oakland, California
SES Project #4-719-12

Dear Mr. Legallet:

Sierra Environmental Services (SES) is pleased to provide this report which documents the results of the subsurface investigation at the above-referenced site (Figure 1, Appendix A).

INTRODUCTION

Scope of Work

The objective of the investigation was to further evaluate the extent of stoddard solvent [TPH(S)], benzene, toluene, ethylbenzene and xylenes (BTEX) and volatile organic compounds (VOCs) in ground water off-site. The scope of work for the investigation was to:

1. Prepare a site safety plan specific to this investigation based on past and present site use.
2. Drill thirteen off-site small-diameter borings to a maximum depth of 30 feet using the geoprobe push method. Collect grab ground water samples from the borings or, if ground water is not encountered, collect a soil sample at the maximum boring depth. Analyze the ground water samples for TPH(S), (BTEX) and (VOCs) by EPA Methods 8015, 8020 and 8240, respectively.
3. Dispose of drill cuttings and equipment rinseate.
4. Report the results.

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PROTECTION
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Site History

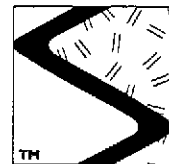
The site was formerly a large-scale dry-cleaning establishment. The on-site underground storage tanks were used by previous occupants to store stoddard solvent, stoddard solvent waste and vehicle fuel.

In May 1992, SES personnel supervised the removal of 17 underground storage tanks from the site. Hydrocarbons as gasoline, diesel, TPH(S), and BTEX were detected in sidewall samples taken from the tank excavations. Analytic results are reported in the 1992 SES report.¹

On December 13 and 14, 1993, SES supervised the drilling of twelve on-site soil borings. Ground water monitoring wells (MW-1 through MW-3) were installed in three of the soil borings. The monitoring well and soil boring locations are shown on Figure 2 (Appendix A). Results of the investigation are discussed in the SES report dated April 15, 1994.²

Since the installation of the monitoring wells, SES has conducted monthly water level measurements and quarterly ground water sampling. Results of the monthly water level measurements and the quarterly ground water sampling are presented in the most recent ground water monitoring report, dated November 27, 1996.³ Analytic results for ground water are presented in Tables 2 and 3 (Appendix B).

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- ¹ Sierra Environmental Services, 1992, Consultant's Report of Tank Removal Activities, prepared for Telegraph Business Properties, July 21, 1992, 9 pages and 4 appendices.
 - ² Sierra Environmental Services, 1994, Subsurface Investigation Report, prepared for Telegraph Business Properties, April 15, 1994, 6 pages and 5 appendices.
 - ³ Sierra Environmental Services, 1996, Quarterly Ground Water Monitoring Report, prepared for Telegraph Business Properties, November 27, 1996, 2 pages and 5 attachments.



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Topographic and Geologic Setting

The site is located in the City of Oakland, Alameda County, California. The topography of the site is relatively flat.⁴ The average ground water gradient based on previous water level measurements on the site from February 1994 to November 1996 is toward the west-southwest at 0.023 ft/ft.⁵ The closest surface water body is Glenn Echo Creek located approximately one-half mile southeast of the site. Glen Echo Creek flows into Lake Merritt. The site is approximately 118 feet above mean sea level.

The site is underlain by Late Pleistocene alluvial (Temescal Formation) which consists of weakly consolidated, slightly weathered, poorly sorted, irregular interbedded clay, silt, sand and gravel.^{6,7} Soils encountered in off-site borings surrounding the site consisted of sandy clays and clayey sands with small gravels to a maximum depth of approximately 30 feet below ground surface (BGS). Boring logs for thirteen off-site borings are included as Appendix D.

SUBSURFACE INVESTIGATION

On September 24, September 25 and October 31, 1996, SES supervised the drilling of thirteen off-site borings (B-18 through B-30) by the geoprobe push method. The borings were advanced by Vironex Environmental Field Services of Hayward, California (C-57 #705927). Boring locations are shown on Figure 2 (Appendix A). SES Standard Operating Procedures for Soil Sampling

⁴ United States, Geological Survey, Topographic Map, Oakland West 7.5 Minute Quadrangle, 1959, photorevised (1980).

⁵ Sierra Environmental Services, 1996, Quarterly Ground Water Monitoring Report, prepared for Telegraph Business Properties, November 27, 1996, 2 pages and 5 attachments.

⁶ Helley, E.J. and K. R. Lajole, 1979, Flatland Deposits of the San Francisco Bay Region, California - Their Geology and Engineering Properties, and Their Importance to Comprehensive Planning, U.S. Geological Survey, Geological Survey Professional Paper 943, 88 pages.

⁷ Radbruch, Dorothy H., 1957, Aerial and Engineering Geology of the Oakland West Quadrangle, U.S. Geological Survey, Miscellaneous Geologic Investigations Map, I-239.



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- Direct Push, Logging Method, OVM Readings and Collection of Grab Ground Water Samples From Temporary Sampling Points were followed during this investigation (Appendix C).

Soil Borings

Soils were logged in accordance with SES Standard Operating Procedures for Logging Method (Appendix C). Detailed descriptions of subsurface sediments are classified according to the ASTM Soil Classification System. The descriptions are on the boring logs. A chart of the ASTM Soil Classification System and boring logs are presented in Appendix D.

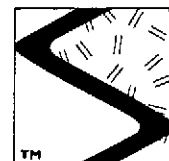
Ground water was not encountered in the following borings: B-21, B-22, B-24 and B-25. In these borings, one soil sample was collected. A soil sample was also collected from boring B-23.

ANALYTIC RESULTS FOR SOIL

Four borings did not contain ground water. Soil samples from boring B-21 at 16 feet BGS, B-22 at 15.5 feet BGS, B-23 at 10.5 and 16 feet BGS, B-24 at 16 feet BGS and B-25 at 16 feet BGS were analyzed for TPH(S), BTEX and VOCs by EPA Methods 8015/5030, 8020 and 8240, respectively. The soil samples analyzed did not contain detectable amounts of TPH(S), BTEX or VOCs except for sample number B-25 at 16 feet BGS which contained 0.0052 parts per million (ppm) benzene and sample B-23 at 10.5 feet BGS which contained 0.044 ppm xylenes. Analytic results for soil are presented in Table 1 (Appendix B). Chain of custody documents and laboratory analytic reports are included in Appendix E.

ANALYTIC RESULTS FOR GROUND WATER

Grab ground water samples were collected from each of the borings and analyzed for TPH(S) and BTEX by EPA Methods 8015/5030 and 8020, respectively; and for VOCs by EPA Method 8240. All analyses were performed by Superior Analytical Laboratory of Martinez, California. SES is not



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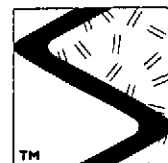
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responsible for laboratory omissions or errors. Analytic results for ground water are presented in Tables 2 and 3 (Appendix B). Chain of custody documents and laboratory analytic reports are included in Appendix E.

Stoddard solvent was detected in only one ground water sample collected from boring B-23 at 4,600 parts per billion (ppb). Analytic results for TPH(S) in ground water are depicted graphically in an isoconcentration map for TPH(S) in Figure 3 (Appendix A). Unknown hydrocarbons not resembling a TPH(S) fingerprint were reported in ground water samples from borings B-19, B-28 and B-30 at 50 ppb, 80 ppb and 100 ppb, respectively. BTEX compounds were detected in ground water samples collected from borings B-19, B-23, B-27 and B-30 at concentrations ranging from 0.5 ppb to 640 ppb. Three organic compounds cis-1,2-dichloroethene, trichloroethene, and tetrachloroethene were detected in ground water samples collected from borings B-18, B-20 and B-30 ranging from 8.4 ppb to 24 ppb.

CONCLUSIONS

Based on analytic data collected during this and previous investigations, it appears that the extent of ground water containing TPH(S), BTEX and VOCs has been defined. In the ground water sample collected from B-23, TPH(S) was detected at 4,600 ppb. Minor concentrations of BTEX, VOCs and heavier hydrocarbons were detected in several other borings. It appears that these minor concentrations may originate from unknown sources or from previous industrial use of the area. Recommendations for future action at the site will be sent under separate cover.



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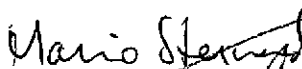
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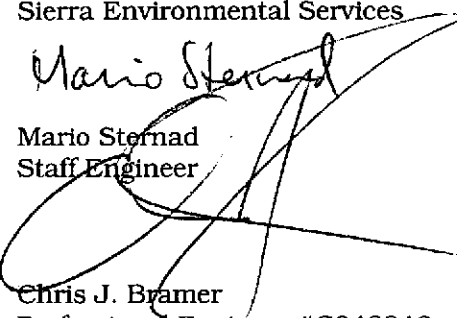
Thank you for the opportunity to provide environmental consulting services to Telegraph Business Park. Please call if you have any questions.



Sincerely,
Sierra Environmental Services



Mario Sternad
Staff Engineer

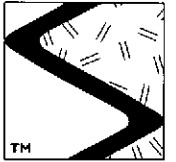


Chris J. Bramer
Professional Engineer #C048846

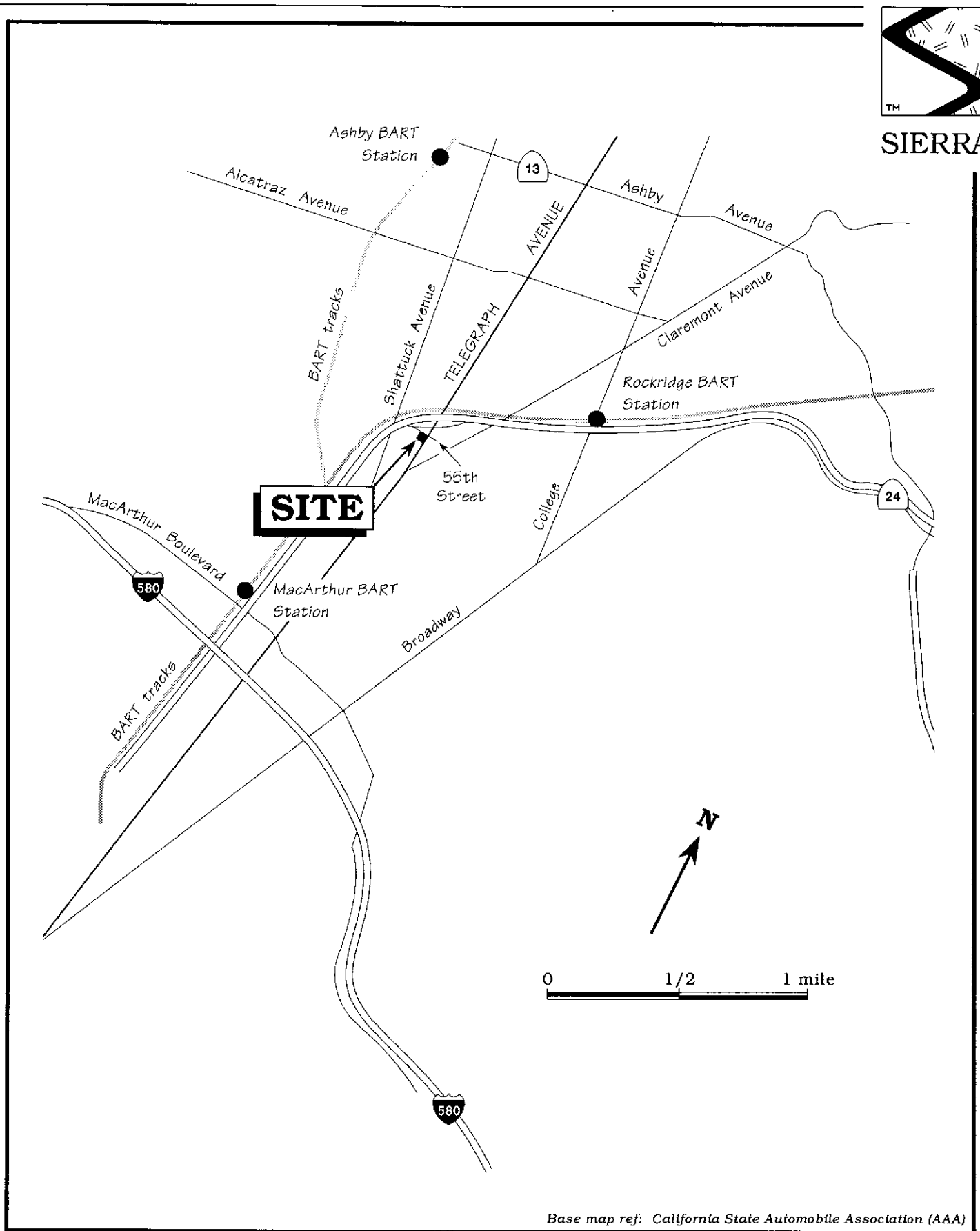
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Attachments: Appendix A - Figures
Appendix B - Tables
Appendix C - SES Standard Operating Procedures
Appendix D - ASTM Soil Classification System Chart and Boring Logs
Appendix E - Chain of Custody Documents and Laboratory Analytic Reports

cc: Susan Hugo, Alameda County Department of Environmental Health
Wyman Hong, Alameda County - Zone 7



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Base map ref: California State Automobile Association (AAA)

Figure 1. Site Location Map - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California



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56TH STREET

HIGHWAY 24
(elevated)

SHATTUCK AVENUE

CHEVRON
SERVICE
STATION

B-30	
1.4	B
0.6	T
3.7	E
6.9	X
14	c-1,2DCE
100	Unk

B-23	
0.044	X
4,600	SSolvent
0.7	T
100	E
540	X

B-28	
80	Unk

GARAGE

B-4	
100	SSolvent
15,000	SSolvent
90	TPH(D)

B-9	
60	SSolvent

MW-1	
15	TPH(D)
2,320	SSolvent
1,300	SSolvent
1.5	B
1.3	T
3.6	E
11	X

B-3	
1,900	SSolvent
13	TPH(D)
780,000	SSolvent
3,700	TPH(D)

B-29	
ND	

B-8	
ND	

55TH STREET

FORMER
SERVICE
STATION

CALTRANS
PROPERTY

B-7	
1,380	SSolvent
14	TPH(D)
18,000	SSolvent
390	TPH(D)

B-1	
2,000	SSolvent
93,000	SSolvent
1,200	TPH(D)

concrete wall

residence

B-2	
3,060	SSolvent
1,400,000	SSolvent
4,000	TPH(D)

BUILDING

former
10,000 gal.
gasoline
tank

B-22	
ND	

(dry)

MW-3	
160	SSolvent
2.9	TPH(D) ²
2,000	SSolvent
170	B ¹
6.6	T
16	E
26	X
1.2	VC
5.9	c-1,2DCE
1.6	CB

B-6	
150	SSolvent
190	TPH(D)
9,000	SSolvent
460	TPH(D)

B-5	
1,600	SSolvent
100	TPH(D)

B-11	
210	SSolvent

B-12	
150	SSolvent

CALTRANS
PROPERTY
(grassy slope)

B-15	
9,100	SSolvent
40	B
60	E

former
diesel tank

former
Stoddard
Solvent
waste tank

B-10	
110,000	SSolvent

communication tower

apartment
parking
area

former 5,000 and
3,500 gal. Stoddard
Solvent tanks

former
Stoddard
Solvent
waste tanks

BUILDING

MW-2	
6,500	SSolvent ²
6,200	SSolvent
19	B ¹
30	T
58	E
310	X
4.3	DCA
36	c-1,2DCE

parking

(dry)

B-13	
220	SSolvent
2.3	B
0.8	T
4.0	X
430	VC
32	DCA
7.9	t-1,2DCE
810	c-1,2DCE

apartments

TELEGRAPH

B-24	
ND	

Ground water
flow direction
(February 1994
through August
1996)

B-18	
0.5	
16	
10	
24	

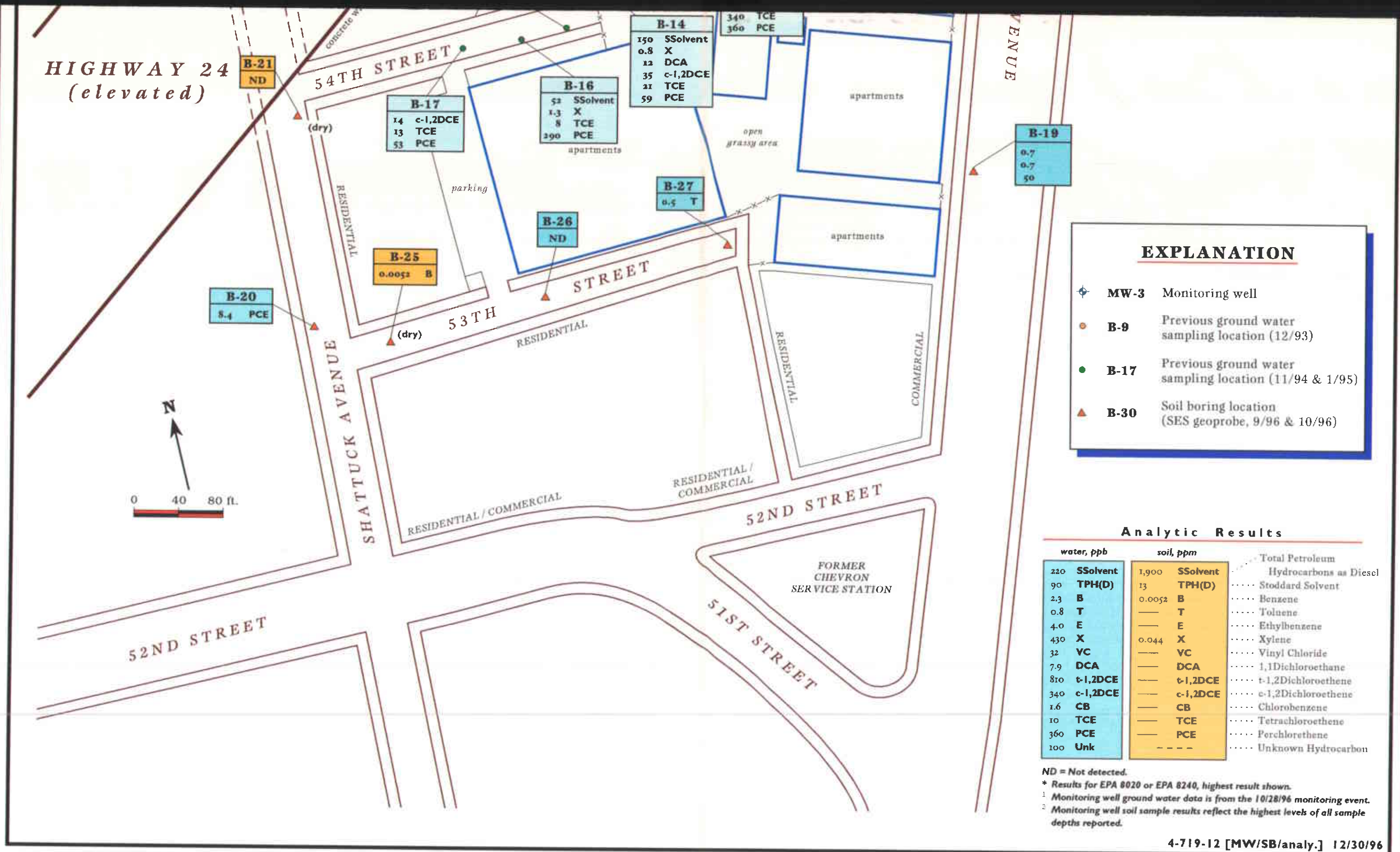
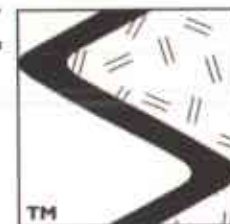
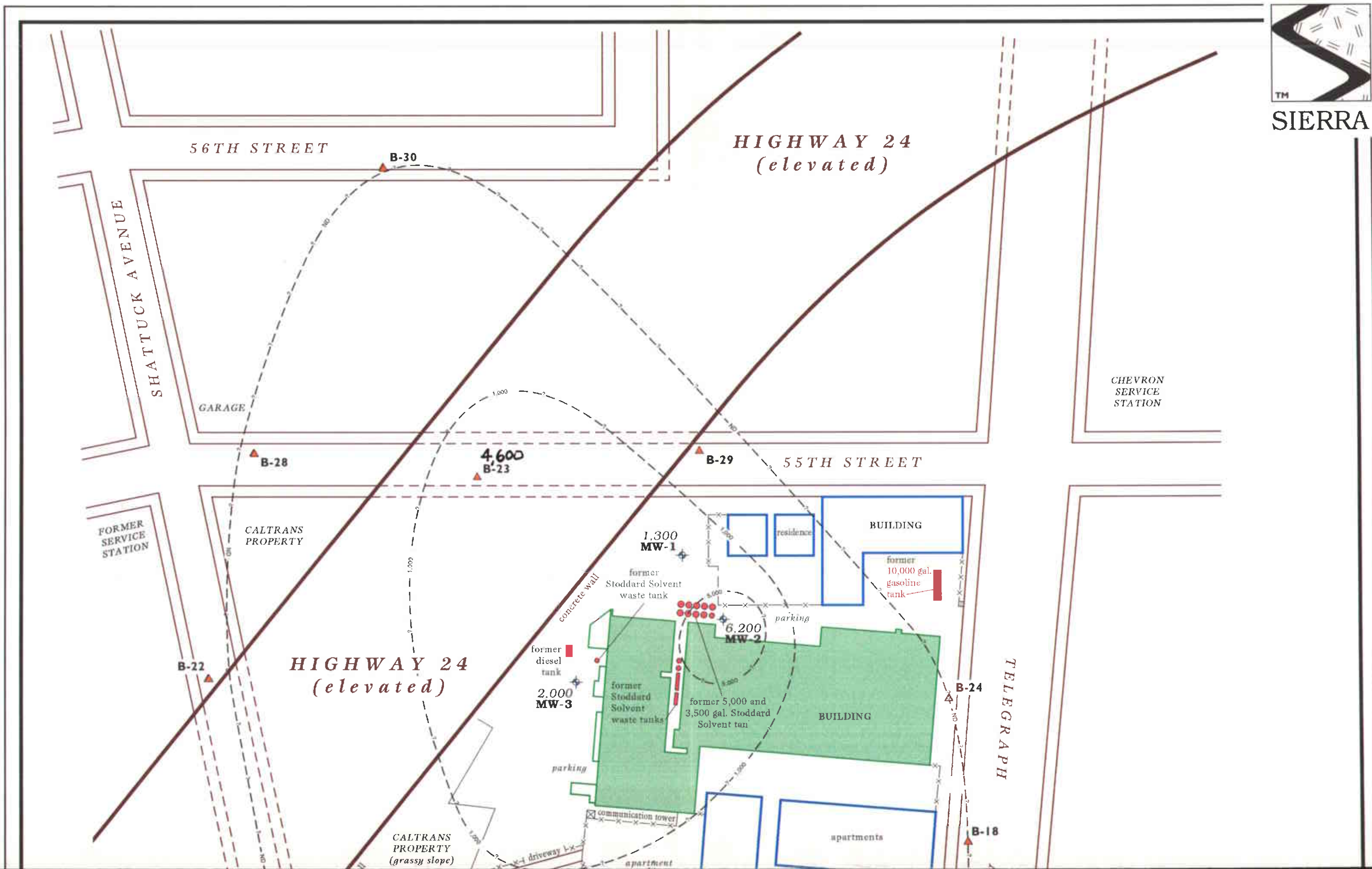





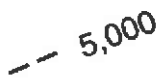
Figure 2. Monitoring Well, Soil Sampling and Grab Ground Water Sampling Locations – October, 1996 – Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California



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EXPLANATION	
	MW-3 Monitoring well
	B-30 Soil boring location (SES geoprobe, 9/96 & 10/96)
	2,000 Concentration of stoddard solvent in ground water (ppb)
	5,000 Stoddard solvent isoconcentration contour, in ppb, dashed where inferred, queried where uncertain

Note: ND = Not detected

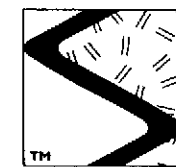
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Figure 3. Isoconcentration Contour Map for Stoddard Solvent in Ground Water – September 24, 25 and October 31, 1996 – Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California



Table 1. Analytic Results for Soil - Petroleum Hydrocarbons/VOCs - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

Sample ID	Depth (Feet, BGS)	Date Sampled	Analytic Method	TPH(D)	Stoddard Solvent	ppm					VOCs
						B	T	E	X		
B-1	2.5	12/13/93	LUFT	<10	980	---	---	---	---	---	
	8.5	12/13/93	LUFT	<10	2,000	---	---	---	---	---	
B-2	5.5	12/13/93	LUFT	<10	1,640	---	---	---	---	---	
	10.5	12/13/93	LUFT	<10	3,060	---	---	---	---	---	
B-3	5.5	12/13/93	LUFT	13	1,900	---	---	---	---	---	
B-4	5.5	12/13/93	LUFT	<10	100	---	---	---	---	---	
B-5	5.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
B-6	5.5	12/14/93	LUFT	190	110	---	---	---	---	---	
	10.5	12/14/93	LUFT	11	150	---	---	---	---	---	
B-7	5.5	12/14/93	LUFT	11	1,380	---	---	---	---	---	
	10.5	12/14/93	LUFT	14	920	---	---	---	---	---	
B-8	5.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
	10.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
	15.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
	20.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
B-9	5.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
	10.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
MW-1	5.5	12/14/93	LUFT	15	2,320	---	---	---	---	---	
	9.5	12/14/93	LUFT	<1.0	1.2	---	---	---	---	---	
	15.5	12/14/93	LUFT	<1.0	7.5	---	---	---	---	---	
	20.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
MW-2	5.5	12/14/93	LUFT	<10	2,780	---	---	---	---	---	
	10.5	12/14/93	LUFT	<10	6,500	---	---	---	---	---	
	15.5	12/14/93	LUFT	<1.0	18	---	---	---	---	---	
	20.5	12/14/93	LUFT	<1.0	<1.0	---	---	---	---	---	
	25.5	12/14/93	LUFT	<10	200	---	---	---	---	---	
MW-3	5.5	12/14/93	LUFT	2.9	2.6	---	---	---	---	---	



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Table 1. Analytic Results for Soil - Petroleum Hydrocarbons/VOCs - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Depth (Feet, BGS)	Date Sampled	Analytic Method	TPH(D)	Stoddard Solvent	ppm				VOCs
						B	T	E	X	
	10.5	12/14/93	LUFT	<10	260	---	---	---	---	---
	15.5	12/14/93	LUFT	2.5	34	---	---	---	---	---
B-21	16.0	9/24/96	8015/8020/8240	---	<10	<0.005	<0.005	<0.005	<0.005	ND¹
B-22	15.5	9/24/96	8015/8020/8240	---	<10	<0.005	<0.005	<0.005	<0.005	ND¹
B-23	10.5	9/25/96	8015/8020/8240	---	<10	<0.005	<0.005	<0.005	0.044	ND¹
B-24	16.0	9/25/96	8015/8020/8240	---	<10	<0.005	<0.005	<0.005	<0.005	ND¹
B-25	16.0	9/25/96	8015/8020/8240	---	<10	<0.005	<0.005	<0.005	<0.005	ND²

EXPLANATION:

TPH(D) = Total Petroleum Hydrocarbons, as Diesel
 B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Xylenes
 VOCs = Volatile Organic Compounds
 BGS = Below ground surface
 ND = Not detected at detection limits noted
 ppm = Parts per million
 --- = Not analyzed/Not applicable

ANALYTIC LABORATORY:

Samples taken on 12/13/93 and 12/14/93 were analyzed by Precision Analytical Laboratory, Richmond, California.

Samples collected on 9/24/96 and 9/25/96 were analyzed by Superior Analytical Laboratory of Martinez, California.

ANALYTIC METHODS:

LUFT = Department of Health Services LUFT Manual Method for TPH(D) and Stoddard Solvent.
 8020 = EPA Method 5030/8020 for BTEX.
 8015 = EPA Method 8015 modified for Stoddard.
 8015 = EPA Method 8015 modified for TPH(D).
 8240 = EPA Method 8240 for VOCs.

NOTES:

- ¹ Volatile Organic Compounds not detected at detection limits ranging from 0.005 to 0.2 ppm.
- ² Sample contains 0.0052 ppm benzene. All other Volatile Organic Compounds not detected at detection limits ranging from 0.005 to 0.2 ppm.



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

Sample ID	Date Sampled	Analytic Method	TPH(D)	Stoddard Solvent	O&G	ppb			
						B	T	E	X
B-1	12/13/93	LUFT	1,200	93,000	---	---	---	---	---
B-2	12/13/93	LUFT	4,000	1,400,000	---	---	---	---	---
B-3	12/13/93	LUFT	3,700	780,000	---	---	---	---	---
B-4	12/13/93	LUFT	90	15,000	---	---	---	---	---
B-5	12/14/93	LUFT	100	1,600	---	---	---	---	---
B-6	12/14/93	LUFT	460	9,000	---	---	---	---	---
B-7	12/14/93	LUFT	390	18,000	---	---	---	---	---
B-8	12/14/93	LUFT	<50	<50	---	---	---	---	---
B-9	12/14/93	LUFT	<50	60	---	---	---	---	---
B-10	11/30/94	LUFT/5520/602	---	120,000	<10,000	<0.3	<0.3	<0.3	<0.3
B-11	11/30/94	LUFT/5520/602	---	210	<10,000	<0.3	<0.3	<0.3	<0.3
B-12	11/30/94	LUFT/5520/602	---	150	<10,000	<0.3	<0.3	<0.3	<0.3
B-13	11/30/94	LUFT/5520/602	---	220	<10,000	2.3	0.80	<0.3	4
B-14	11/30/94	LUFT/5520/602	---	150	<10,000	<0.3	<0.3	<0.3	0.80
B-15	1/23/95	LUFT/5520/602	---	9,100	<10,000	40	<3.0	60	<3.0
B-16	1/23/95	LUFT/5520/602	---	52 ¹	<13,000	<0.3	<0.3	<0.3	1.3
B-17	1/23/95	LUFT/5520/602	---	<50	<10,000	<0.3	<0.3	<0.3	<0.3
B-18	9/24/96	8015/8020	---	<50	---	<0.5	0.5	<0.5	<0.5
B-19	9/24/96	8015/8020	---	<50⁸	---	<0.5	0.7	<0.5	0.7



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Date Sampled	Analytic Method	TPH(D)	Stoddard Solvent	O&G	ppb			
						B	T	E	X
B-20	9/24/96	8015/8020	---	<50	---	<0.5	<0.5	<0.5	<0.5
B-21	9/24/96 ⁷	8015/8020	---	---	---	---	---	---	---
B-22	9/24/96 ⁷	8015/8020	---	---	---	---	---	---	---
B-23	9/25/96	8015/8020	---	4,600	---	<0.5	0.7	100	540
B-24	9/25/96 ⁷	8015/8020	---	---	---	---	---	---	---
B-25	9/25/96 ⁷	8015/8020	---	---	---	---	---	---	---
B-26	9/25/96	8015/8020	---	<50	---	<0.5	<0.5	<0.5	<0.5
B-27	9/25/96	8015/8020	---	<50	---	<0.5	0.5	<0.5	<0.5
W-B28	10/31/96	8015/8020	<50	<50 ⁸	---	<0.5	<0.5	<0.5	<0.5
W-B29	10/31/96	8015/8020	<50	<50	---	<0.5	<0.5	<0.5	<0.5
W-B30	10/31/96	8015/8020	<50	<50 ¹²	---	1.4 ⁹	0.6 ⁹	3.0 ¹⁰	5.1 ¹¹
MW-1	1/5/94	LUFT/602	500	1,000	6,300*	3.3	1.6	<0.3	6
	4/6/94	LUFT/602/5520	800	1,400	<5,000	5.6	4.5	<0.3	11
	7/7/94	LUFT/602/5520	400	1,200	8,300*	1.5	0.80	<0.3	1.9
	10/11/94	LUFT/602/5520	<5.0	700	<5,000	<0.3	<0.3	<0.3	<0.3
	1/20/95	LUFT/602	---	1,500	---	3.9	2	<0.3	3.9
	4/7/95	602/5030	2,500	500	---	3.2	1.1	<0.3	1.7
	7/26/95 ^{2,3}	8015/8020	---	1,500	---	3.1	3.2	12	16
	10/25/95	8015/8020	---	660	---	0.6	1.4	20	14
	1/29/96	8015/8020	---	2,500	---	1.8	0.7	8.0	13
	4/26/96	8015/8020	---	4,600	---	<2.5	<2.5	9.5	21
	7/25/96 ⁵	8015/8020	---	2,200 ⁴	---	1.6	1.6	11	51
10/28/96 ¹⁴	8015/8020	---	1,300	---	1.5	1.3 ¹³	3.6 ¹³	11 ¹³	
MW-2	1/5/94	LUFT/602	200	35,000	<5,000	12	38	<3.0	150



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Date Sampled	Analytic Method	TPH(D)	Stoddard Solvent	O&G	ppb			
						B	T	E	X
	4/6/94	LUFT/602/5520	2,200	94,000	15,600	21	22	<6.0	110
	7/7/94	602	---	---	---	16	16	<1.5	1,510
	7/11/94	LUFT/5520	800	43,000	14,500*	---	---	---	---
	10/11/94	LUFT/5520/602	<5.0	31,000	<5,000	17	13	14	0.3
	1/20/95	LUFT/602	---	26,000	---	18	13	12	50
	4/7/95	602/5030	900	70,000	---	17.5	11	<0.6	74.6
	7/26/95	8015/8020	---	21,000	---	17	<0.5	26	94
	10/25/95	8015/8020	---	38,000	---	63	70	440	1,100
	1/29/96	8015/8020	---	74,000	---	7.4	8.6	66	330
	4/26/96	8015/8020	---	81,000	---	<250	<250	3,100	15,000
	7/25/96 ^s	8015/8020	---	48,000	---	17	9.4	59	200
	10/28/96¹⁴	8015/8020	---	6,200	---	19	30	58¹⁵	310¹⁵
MW-3	1/5/94	LUFT/5520/602	70	1,100	<5,000	180	20	85	10
	4/6/94	LUFT/5520/602	<50	1,000	<5,000	140	13	60	<12
	7/7/94	602	---	---	---	120	7.5	8.0	<3.0
	7/11/94	LUFT/5520	270	1,000	<5,000*	---	---	---	---
	10/11/94	LUFT/5520/602	<5.0	1,100	<5,000	200	11	23	<0.3
	1/20/95	LUFT/602	---	2,100	---	36	3.5	4.8	<0.3
	4/7/95	602/5030	90	600	---	32.7	1.7	4.7	1.9
	7/26/95 ^s	8015/8020	---	1,200	---	98	3.2	12	16
	10/25/95	8015/8020	---	2,300	---	32	3.4	4.7	9.6
	1/29/96	8015/8020	---	1,100	---	22	1.2	6.4	12
	4/26/96	8015/8020	---	1,300	---	5.6	0.6	4.6	14
	7/25/96 ^s	8015/8020	---	2,900	---	120	6.4	23	36
	10/28/96¹⁴	8015/8020	---	2,000	---	170	6.6	16¹⁵	26¹⁵
Trip Blank									
TB-LB	1/5/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	4/6/94	602	---	---	---	<0.3	<0.3	<0.3	<0.6
	7/7/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	10/11/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	11/30/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	1/20/95	LUFT/602	---	<50	---	<0.3	<0.3	<0.3	<0.3
	1/23/95	LUFT/602	---	<50	---	<0.3	<0.3	<0.3	<0.3
	4/7/95	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	7/26/95	8020	---	---	---	<0.5	<0.5	<0.5	<0.5



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Date Sampled	Analytic Method	TPH(D)	Stoddard Solvent	O&G	ppb			
						B	T	E	X
	10/25/95	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	1/29/96	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	4/26/96	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	7/25/96	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	9/25/96	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	10/28/96 ¹⁴	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	10/31/96	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
Bailer Blank									
BB	1/5/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	4/6/94	602	---	---	---	<0.3	0.8	<0.3	<0.6
	7/11/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	11/30/94	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	1/20/95	LUFT/602	---	<50	---	<0.3	<0.3	<0.3	<0.3
	1/23/95	LUFT/602	---	<50	---	<0.3	<0.3	<0.3	<0.3
	4/7/95	602	---	---	---	<0.3	<0.3	<0.3	<0.3
	7/26/95	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	10/25/95	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	1/29/96	---	---	---	---	---	---	---	---
	4/26/96	8020	---	---	---	<0.5	<0.5	<0.5	<0.5
	7/25/96	---	---	---	---	---	---	---	---

EXPLANATION:

TPH(D) = Total Petroleum Hydrocarbons as Diesel
 O&G = Oil and Grease
 B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Xylenes
 ppb = Parts per billion
 --- = Not analyzed/Not applicable

ANALYTIC METHODS:

LUFT = Department of Health Services LUFT Manual Method for TPH(D), Stoddard Solvent and O&G.
 602 = EPA Method 602 for BTEX.
 8020 = EPA Method 8020/5030 for BTEX.
 8015 = EPA Method 8015 modified for Diesel.
 8015 = EPA Method 8015 modified for Stoddard.
 5520 = Standard Methods Method 5520 F for non-polar O&G

ANALYTIC LABORATORY:

NOTES:



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Samples were analyzed by Precision Analytical Laboratory, of Richmond, California, prior to July 1995.

Samples were analyzed by Chromolab Environmental Services, of Pleasanton, California July 26, 1995.

Samples were analyzed by Superior Analytical Laboratory of Martinez, California from October, 1995 to present.

- * This result represents both naturally occurring organics and petroleum hydrocarbons due to its analysis by Standard Methods Method 5520B.
- ¹ Stoddard gas range hydrocarbon does not match with stoddard gas standard.
- ² Unknown hydrocarbons in the diesel range were observed in sample.
- ³ Unknown compounds in the motor oil range were observed in sample.
- ⁴ Sample appears to be a mixture of stoddard and heavier unknown hydrocarbons.
- ⁵ Hydrocarbons were found in the range of gasoline, but do not resemble a gasoline fingerprint. Possible Stoddard.
- ⁶ Heavy hydrocarbons were found at 50 ppb in the range of diesel, but do not resemble a diesel fingerprint. Possible motor oil.
- ⁷ No ground water was found.
- ⁸ Heavier hydrocarbons were found at 80 ppb in the range of stoddard, but do not resemble a stoddard fingerprint. Possible weathered diesel or motor oil.
- ⁹ There is a greater than 25% difference for detected concentration between the two GC columns.
- ¹⁰ A level of 3.7 ppb ethylbenzene was reported in this sample after analysis for Volatile Organics by EPA 8240.
- ¹¹ A level of 6.9 ppb xylenes was reported in this sample after analysis for Volatile Organics by EPA 8240.
- ¹² Hydrocarbons were found at 100 ppb in the range of stoddard, but do not resemble a stoddard fingerprint.
- ¹³ There is a greater than 25% difference for detected concentration between the two GC columns. TPH extractables are interfering with results.
- ¹⁴ Analytic results are from SES Quarterly Monitoring Report, dated November 27, 1996.



Table 3. Analytic Results for Ground Water - Volatile Organic Compounds - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

Sample ID	Date Sampled	Analytic Method	VC	1,1-DCA	t-1,2-DCE	c-1,2-DCE	C	1,2-DCA	TCE	PCE	1,2-DCB	Other HVOCs	Other VOCs
B-10	11/30/94	8240	<2	<3	<3	<3	<3	<2	<3	<2	<4	---	ND ¹⁰
B-11	11/30/94	8240	<2	<3	<3	<3	<3	<2	<3	<2	<4	---	ND ¹⁰
B-12	11/30/94	8240	<2	<3	<3	<3	<3	<2	<3	<2	<4	---	ND ¹⁰
B-13	11/30/94	8240	430	32	7.9	810	<3	<2	340	360	<4	---	ND ¹⁰
B-14	11/30/94	8240	<2	12	<3	35	<3	<2	21	59	<4	---	ND ¹⁰
B-15	1/23/95	8240	<2	<3	<3	<3	<3	<2	<3	<2	<4	---	ND ¹⁰
B-16	1/23/95	8240	<2	<3	<3	<3	<3	<2	8	290	<4	---	ND ¹⁰
B-17	1/23/95	8240	<2	<3	<3	14	<3	<2	13	53	<4	---	ND ¹⁰
B-18	9/24/96	8240	<10	<3	<3	16	<3	<1	10	24	<3	---	ND ²⁵
B-19	9/24/96	8240	<10	<3	<3	<3	<3	<1	<3	<3	<3	---	ND ²⁵
B-20	9/24/96	8240	<10	<3	<3	<3	<3	<1	<3	8.4	<3	---	ND ²⁵
B-21	9/24/96 ²³	---	---	---	---	---	---	---	---	---	---	---	---
B-22	9/24/96 ²³	---	---	---	---	---	---	---	---	---	---	---	---
B-23	9/25/96	8240	<10	<3	<3	<3	<3	<1	<3	<3	<3	---	ND ²⁵
B-24	9/25/96 ²³	---	---	---	---	---	---	---	---	---	---	---	---
B-25	9/25/96 ²³	---	---	---	---	---	---	---	---	---	---	---	---
B-26	9/25/96	8240	<10	<3	<3	<3	<3	<1	<3	<3	<3	---	ND ²⁵
B-27	9/25/96	8240	<10	<3	<3	<3	<3	<1	<3	<3	<3	---	ND ²⁵



Table 3. Analytic Results for Ground Water - Volatile Organic Compounds - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Date Sampled	Analytic Method	←-----ppb-----→											
			VC	1,1-DCA	t-1,2-DCE	c-1,2-DCE	C	1,2-DCA	TCE	PCE	1,2-DCB	Other HVOCs	Other VOCs	
W-B28	10/31/96	8240	<10	<3	<3	<3	<3	<3	<1	<3	<3	<3	---	ND ²⁵
W-B29	10/31/96	8240	<10	<3	<3	<3	<3	<3	<1	<3	<3	<3	---	ND ²⁵
W-B30	10/31/96	8240	<10	<3	<3	14	<3	<3	<1	<3	<3	<3	---	ND ²⁵
MW-1	1/5/94	8010	<1	<0.3	<0.2	0.44	0.35	<0.2	<0.3	<2	0.36	ND ¹	---	
	4/6/94	8010	<1	<0.3	<0.2	0.32	<0.2	<0.2	<0.3	<2	0.21	ND ⁴	---	
	7/7/94	8010	<1	<0.2	<0.2	<0.2	<0.1	<0.5	<0.2	<2	<0.2	ND ⁷	---	
	10/11/94	8240	<2	<3	<3	<3	<3	<2	<3	<2	<4	---	ND ¹⁰	
	1/20/95	8240	<2	<3	<3	<3	<3	<2	<3	<2	<1	---	ND ¹¹	
	4/7/95	8010	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	ND ¹⁴	---	
	7/26/95	8010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND ¹⁴	---	
	10/25/95	8010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	---	
	1/29/96	8010	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	---	
	4/26/96	8010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	---	
	7/25/96	8010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	---	
10/28/96	8010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	---	
MW-2	1/5/94	8010	<1	10	1.1	130	5.6	2.7	2.6	<2	0.90	ND ²	---	
	4/6/94	8010	<1	0.40	<0.2	4.3	<0.2	<0.2	<0.3	<2	0.80	ND ⁵	---	
	7/7/94	8010	<1	3.4	<0.2	15	<0.1	0.60	0.60	<2	0.40	ND ⁸	---	
	10/11/94	8240	<2	<3	<3	31	<3	<2	<3	<2	<4	---	ND ¹⁰	
	1/20/95	8240	<2	5	<3	14	<3	<2	<3	<2	<1	---	ND ¹¹	
	4/7/95	8010	4.9	4.3	<0.5	18	<0.5	1.4	<0.5	0.8	<0.5	ND ^{12,14}	---	
	7/26/95	8010	8.1	5.1	<0.5	20	<0.5	<0.5	<0.5	1.6	<0.5	ND ¹⁴	---	
	10/25/95	8010	17	5.4	<0.5	40	<0.5	<0.5	1.7	9.4	<0.5	ND ¹⁶	---	
	1/29/96	8010	4.2	4.1	<0.5	27	<0.5	<0.5	1.3	0.9	0.7	ND	---	
	4/26/96	8010	3.3	0.8	<0.5	4.4	<0.5	<0.5	<0.5	<0.5	1.0	ND ¹⁹	---	
	7/25/96	8010	0.8	2.3	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	0.5	ND ²¹	---	
10/28/96	8010	<2.5	4.3	<2.5	36	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	ND	---	
MW-3	1/5/94	8010	<1	0.70	<0.2	5.2	1.3	0.20	<0.3	<2	1.5	ND ³	---	
	4/6/94	8010	<1	0.40	<0.2	4.2	<0.2	<0.2	<0.3	<2	0.80	ND ⁶	---	
MW-3	7/7/94	8010	<1	0.30	<0.2	2.9	<0.1	<0.5	<0.2	<2	1.3	ND ⁹	---	



Table 3. Analytic Results for Ground Water - Volatile Organic Compounds - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Date Sampled	Analytic Method	VC	1,1-DCA	t-1,2-DCE	c-1,2-DCE	C	1,2-DCA	TCE	PCE	1,2-DCB	Other HVOCs	Other VOCs
←-----ppb-----→													
	10/11/94	8240	<2	<3	<3	<3	<3	<2	<3	<2	<4	---	ND ¹⁰
	1/20/95	8240	<2	<3	<3	6	<3	<2	<3	<2	1	---	ND ¹¹
	4/7/95	8010	8.8	<0.5	<0.5	13	<0.5	0.7	<0.5	<0.5	2	ND ^{13,14}	---
	7/26/95	8010	9.6	<0.5	<0.5	6.3	<0.5	<0.5	<0.5	<0.5	<0.5	ND ¹⁵	---
	10/25/95	8010	4.2	<0.5	<0.5	4.1	<0.5	<0.5	<0.5	<0.5	1.6	ND ¹⁷	---
	1/29/96	8010	2.0	<0.5	<0.5	2.8	<0.5	<0.5	<0.5	<0.5	1.5	ND ¹⁸	---
	4/26/96	8010	3.6	<0.5	<0.5	3.4	<0.5	<0.5	<0.5	<0.5	2.7	ND ²⁰	---
	7/25/96	8010	1.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	2.0	ND ²²	---
	10/28/96	8010	1.2	<0.5	<0.5	5.9	<0.5	<0.5	<0.5	<0.5	<0.5	ND²⁴	---

EXPLANATION:

VC = Vinyl Chloride
 1,1-DCA = 1,1-Dichloroethane
 t-1,2-DCE = trans-1,2-Dichloroethene
 c-1,2-DCE = cis-1,2-Dichloroethene
 C = Chloroform
 1,2-DCA = 1,2-Dichloroethane
 TCE = Trichloroethene
 PCE = Tetrachloroethene
 1,2-DCB = 1,2-Dichlorobenzene
 HVOCs = Halogenated Volatile Organic Compounds
 VOCs = Volatile Organic Compounds
 ppb = Parts per billion
 ND = Not detected
 --- = Not analyzed/not applicable

ANALYTIC LABORATORY:

Samples collected prior to July 1995 were analyzed by Precision Analytical Laboratory, Richmond, California.

Samples collected in July 1995 were analyzed by Chromalab Environmental Services, of Pleasanton, California.

Samples collected from October 1995 to present were analyzed by Superior Analytical Laboratory of Martinez, California.

ANALYTIC METHODS:

8010 = EPA Method 5030/8010 for HVOCs
 8240 = EPA Method 8240 for VOCs

NOTES:

- ¹ 1,4-Dichlorobenzene was detected at 0.34 ppb. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.
- ² 1,2-Dichloropropene, T-1,3-Dichloropropene, and 1,4-Dichlorobenzene were detected at 18, 1.0 and 1.0 ppb, respectively. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.
- ³ Chlorobenzene and 1,4-Dichlorobenzene were detected at 0.70 and 0.30 ppb, respectively. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.
- ⁴ 1,4-Dichlorobenzene was detected at 0.21 ppb. Other HVOCs not detected at detection limits of 0.2 to 2.2 ppb.
- ⁵ Chlorobenzene was detected at 1.7 ppb. Other HVOCs not detected at detection limits of 0.2 to 2.2 ppb.
- ⁶ Chlorobenzene was detected at 1.6 ppb. Other HVOCs not detected at detection limits of 0.2 to 2.2 ppb.
- ⁷ 1,4-Dichlorobenzene was detected at 0.26 ppb. Other HVOCs not detected at



Table 3. Analytic Results for Ground Water - Volatile Organic Compounds - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California
(continued)

detection limits of 0.2 to 2.0 ppb.

⁸ 1,2-Dichloropropane, tetrachloroethene and 1,4-Dichlorobenzene were detected at 6.5, 1.4 and 0.34 ppb, respectively. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.

⁹ Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.

¹⁰ Benzene, toluene, ethylbenzene and xylene results are included on Table 2. Other VOCs not detected at detection limits of 2 to 50 ppb.

¹¹ Benzene, toluene, ethylbenzene and xylene results are included on Table 2. Other VOCs not detected at detection limits of 1 to 7 ppb.

¹² 1,2-dichloropropane was detected at 8.0 ppb.

¹³ Chlorobenzene was detected at 7.3 ppb.

¹⁴ Other HVOCs were not detected at a detection limit of 0.5 ppb.

¹⁵ Chlorobenzene was detected at 4.0 ppb.

¹⁶ 1,2 Dichloropropane was detected at 9.0 ppb.

¹⁷ Chlorobenzene was detected at 1.7 ppb.

¹⁸ Benzene, toluene, ethylbenzene and xylene results included in Table 2.

¹⁹ 1,2-Dichloropropane was detected at 2.0 ppb.

²⁰ Chlorobenzene was detected at 6.1 ppb.

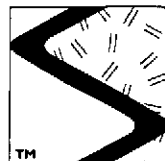
²¹ 1,2-Dichloropropane was detected at 4.1 ppb.

²² Chlorobenzene was detected at 3.2 ppb.

²³ No ground water found in borehole.

²⁴ Chlorobenzene was detected at 1.6 ppb. All other HVOCs were not detected at a detection limit of 0.5 ppb.

²⁵ Benzene, toluene, ethylbenzene and xylene results are included on Table 2. Other VOCs not detected at detection limits of 2 to 40 ppb.



SIERRA

APPENDIX C
SIERRA ENVIRONMENTAL SERVICES
STANDARD OPERATING PROCEDURES



SES STANDARD OPERATING PROCEDURE

SOIL SAMPLING - DIRECT-PUSH

The following describes sampling procedures used by SES field personnel to collect, handle, and transport soil samples collected by direct-push technology. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis.

All drilling and sampling equipment is washed with an EPA approved detergent (such as liquinox or trisodium phosphate) between sample collection to prevent cross-contamination. Collection methods specific to soil sampling are presented below.

Soil samples are collected at pre-specified depth intervals or at a sediment/lithologic change for hydrogeologic description and possible chemical analysis. Samples are collected using a hydraulic sampling device lined with 1- or 2-inch I.D. disposable poly-vinyl or new or steam-cleaned brass or stainless-steel tubes.

The sampler is driven hydraulically to the specified depth and then extracted from the borehole. If poly-vinyl sampling tubes are used, the desired portion of the tube and the soil it contains are carefully cut and removed for possible analysis. If brass or stainless-steel tubes are used, the middle or bottom tube is carefully removed for possible analysis. The soil material is immediately trimmed flush with the tube ends, and sealed with Teflon tape beneath polyethylene end caps. The caps are hermetically sealed to the tube with duct tape. The sample is then labeled to include the date, boring number, depth of sample, project number, SES, and the SES field personnel's initials. The samples are put into a resealable plastic bag and placed into an ice chest maintained below 4°C with blue ice or dry ice, for transport under chain of custody to the laboratory. The chain-of-custody form includes the project number, analysis requested, sample ID, date analysis and the SES field personnel's name. The form is signed, dated and timed by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.



SES STANDARD OPERATING PROCEDURE

LOGGING METHOD

Unconsolidated soil is classified and described by trained SES field personnel. All available information is used, including the following: soil recovered in the sampler, including the soil visible on both ends of the sample retained for possible analysis; soil cuttings generated during drilling; and the drilling contractor's observations of the drill rig's behavior.

Classification and description of unconsolidated soil is accomplished using the American Society of Testing and Materials (ASTM) Methods D2487-85 (Unified Soil Classification System (USCS)) and/or D2488-69 (Description and Identification of Soils (Visual-Manual Procedure)).

The soil classification and description is recorded on the field log sheet by SES field personnel and includes the following information:

- 1) Soil type;
- 2) Soil classification;
- 3) Soil color, including mottling;
- 4) Moisture content;
- 5) Plasticity and consistency (fine-grained material) or density (coarse-grained material);
- 6) Percentages of clay, silt, sand and gravel;
- 7) Grain size range of sands and gravels;
- 8) Angularity and largest diameter of gravel component;
- 9) Estimated permeability;
- 10) Odor; and
- 11) Any other observations which would assist in the interpretation of the depositional environment and/or differentiation between the various geologic units expected to be encountered.

In addition to the above, the ground water levels encountered during drilling and measured after the water stabilized is also recorded on the field log.



SES STANDARD OPERATING PROCEDURE

OVM READINGS

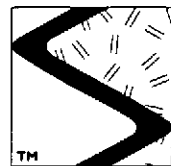
SES uses an organic vapor meter (OVM) to determine the presence or absence of volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes in soil samples chosen for field screening. The OVM uses a photoionization detector (PID) and is calibrated daily to 100 parts per million of 1-liter of isobutylene. The OVM, which measures in parts per million by volume (ppmv), is used for qualitative, not quantitative, assessment because the correlation between the volume measurements of the OVM and the weight measurements of the laboratory instruments is not well defined.

A field screen sample is obtained from the brass tube immediately above or below the brass tube containing the sample selected for possible analysis. The soil to be screened is removed from the brass tube, and is placed in a pre-cleaned brass tube with aluminum foil and a polyethylene cap on one end. The brass tube is loosely filled to approximately 1/2 full. Another square of aluminum foil is placed on the open end and a polyethylene cap with crossed slits is placed over it.

The field screen sample is allowed to temperature equilibrate for approximately 15 to 30 minutes in the sun, allowing any VOCs which might be present in the soil to volatilize out into the brass tube's headspace. The OVM nozzle is then placed inside the sealed brass tube, through the slits in the cap, in order to measure the VOCs present, if any, in the headspace. The nozzle should remain inside the brass tube for approximately 15 to 30 seconds or until the maximum reading has been recorded on the OVM readout panel.

The depth from which the sample came and the corresponding OVM reading is recorded on the original field log sheet. Field observations, OVM and (odor and staining) readings are used in determining which soil samples are to be analyzed in the laboratory.

OVM.SOP



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SES STANDARD OPERATING PROCEDURE

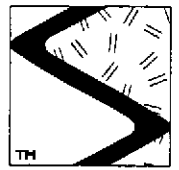
COLLECTION OF GRAB GROUND WATER SAMPLES FROM TEMPORARY SAMPLING POINTS

Prior to drilling temporary sampling point locations and analytical methods for soil and water samples are designated based on the regulatory requirements and objectives of the sampling program. Permits are secured prior to drilling, and utilities are located by an underground utility detection company. The borings are drilled by a licensed drilling contractor using a hollow-stem auger. Borings are logged in accordance with SES Standard Operating Procedure-Logging Method.

Soil samples are collected from the borings at intervals no greater than 5 ft in steam-cleaned or new brass/stainless steel tubes in accordance with SES Standard Operating Procedure-Soil Sampling. SES will attempt to collect a soil sample immediately above the saturated zone. The soil samples will be field-screened for analysis with an organic vapor meter (OVM) in accordance with SES Standard Operating Procedure-OVM Readings. Drill cuttings will be stored on-site on 10-mil polyethylene sheeting. The soil cuttings will be covered with additional polyethylene sheeting pending receipt of analytical data.

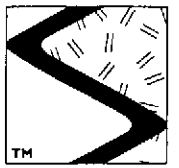
Upon reaching the targeted depth in each of the borings, (commonly about 3 ft below the estimated ground water level), the auger is backed out and the appropriate length of 2-inch diameter 0.010-slotted and blank PVC casing is advanced into the saturated zone. If subsurface conditions require it, the casing is placed in the center of the hollow-stem and then the auger is pulled.

A MMC flexi-dip interface probe is used to measure depth to water and to check for the presence of free-phase hydrocarbons. Product thickness and depth to water are measured to the nearest 0.01 ft and noted on the sampling form. A minimum of four casing volumes of water are purged from the sampling point. Purging is accomplished using a steam-cleaned PVC bailer. Temperature, pH and electrical conductivity are measured at least three times during purging. Purging is continued until changes in these parameters do not exceed +0.5°F, 0.1, or 5%, respectively. The purge water is temporarily stored on-site in properly-labelled, Department of Transportation-approved, 55-gallon drums pending receipt of analytical data. Ground water samples are collected from the sampling points with steam-cleaned Teflon bailers, in accordance with SES Standard Operating Procedure - Ground Water Sampling.



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The temporary ground water sampling points are abandoned according to local requirements after ground water samples have been collected. Generally the casings are pulled and the borings are grouted to the surface with a mixture containing Portland Cement and 3 to 5% bentonite.



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APPENDIX D
ASTM SOIL CLASSIFICATION SYSTEM CHART
AND BORING LOGS

				Group Symbol	Group Name		
GRAVEL % gravel > % sand	≤5% fines	Well-graded		GW	<15% sand	Well-graded GRAVEL	
					≥15% sand	Well-graded GRAVEL with Sand	
	Poorly graded			GP	<15% sand	Poorly graded GRAVEL	
					≥15% sand	Poorly graded GRAVEL with Sand	
	10% fines	Well-graded	fines=ML or MH		GW-GM	<15% sand	Well-graded GRAVEL with Silt
						≥15% sand	Well-graded GRAVEL with Silt and Sand
		fines=CL or CH		GW-GC	<15% sand	Well-graded GRAVEL with Clay	
					≥15% sand	Well-graded GRAVEL with Clay and Sand	
		Poorly graded	fines=ML or MH		GP-GM	<15% sand	Poorly graded GRAVEL with Silt
						≥15% sand	Poorly graded GRAVEL with Silt and Sand
		fines=CL or CH		GP-GC	<15% sand	Poorly graded GRAVEL with Clay	
					≥15% sand	Poorly graded GRAVEL with Clay and Sand	
	≥15% fines	fines=ML or MH			GM	<15% sand	Silty GRAVEL
						≥15% sand	Silty GRAVEL with Sand
fines=CL or CH				GC	<15% sand	Clayey GRAVEL	
					≥15% sand	Clayey GRAVEL with Sand	
SAND % sand ≥ % gravel	≤5% fines	Well-graded		SW	<15% gravel	Well-graded SAND	
					≥15% gravel	Well-graded SAND with Gravel	
	Poorly graded			SP	<15% gravel	Poorly graded SAND	
					≥15% gravel	Poorly graded SAND with Gravel	
	10% fines	Well-graded	fines=ML or MH		SW-SM	<15% gravel	Well-graded SAND with Silt
						≥15% gravel	Well-graded SAND with Silt and Gravel
		fines=CL or CH		SW-SC	<15% gravel	Well-graded SAND with Clay	
					≥15% gravel	Well-graded SAND with Clay and Gravel	
		Poorly graded	fines=ML or MH		SP-SM	<15% gravel	Poorly graded SAND with Silt
						≥15% gravel	Poorly graded SAND with Silt and Gravel
		fines=CL or CH		SP-SC	<15% gravel	Poorly graded SAND with Clay	
					≥15% gravel	Poorly graded SAND with Clay and Gravel	
	≥15% fines	fines=ML or MH			SM	<15% gravel	Silty SAND
						≥15% gravel	Silty SAND with Gravel
fines=CL or CH				SC	<15% gravel	Clayey SAND	
					≥15% gravel	Clayey SAND with Gravel	

>50% or More Fines	Low-Plasticity Clay	CL	<30% sand & gravel	<15% sand & gravel	<15% sand & gravel	Lean CLAY
				15-25% sand & gravel	% sand ≥ % gravel	Lean CLAY with Sand
			≥30% sand & gravel	% sand ≥ % of gravel	<15% gravel	Sandy lean CLAY
					>15% gravel	Sandy lean CLAY with Gravel
				% sand < % gravel	<15% sand	Gravelly lean CLAY
					>15% sand	Gravelly lean CLAY with Sand
	Low-Permeability Silt	ML	<30% sand & gravel	<15% sand & gravel	<15% sand & gravel	SILT
				15-25% sand & gravel	% sand ≥ % gravel	SILT with Sand
			≥30% sand & gravel	% sand ≥ % of gravel	% sand < % gravel	SILT with Gravel
					<15% gravel	Sandy SILT
					>15% gravel	Sandy SILT with Gravel
				% sand < % gravel	<15% sand	Gravelly SILT
		>15% sand	Gravelly SILT with Sand			
	Plastic Clay	CH	<30% sand & gravel	<15% sand & gravel	<15% sand & gravel	Fat CLAY
				15-25% sand & gravel	% sand ≥ % gravel	Fat CLAY with Sand
			≥30% sand & gravel	% sand ≥ % of gravel	% sand < % gravel	Fat CLAY with Gravel
					<15% gravel	Sandy fat CLAY
					>15% gravel	Sandy fat CLAY with Gravel
				% sand < % gravel	<15% sand	Gravelly fat CLAY
		>15% sand	Gravelly fat CLAY with Sand			
	Plastic Silt	MH	<30% sand & gravel	<15% sand & gravel	<15% sand & gravel	Elastic SILT
				15-25% sand & gravel	% sand ≥ % gravel	Elastic SILT with Sand
			≥30% sand & gravel	% sand ≥ % of gravel	% sand < % gravel	Elastic SILT with Gravel
					<15% gravel	Sandy elastic SILT
				>15% gravel	Sandy elastic SILT with Gravel	
% sand < % gravel				<15% sand	Gravelly elastic SILT	
	>15% sand	Gravelly elastic SILT with Sand				
Organics (Peat or Bay Mud)	OU/OH	<30% sand & gravel	<15% sand & gravel	<15% sand & gravel	Organic SOIL	
			15-25% sand & gravel	% sand ≥ % gravel	Organic SOIL with Sand	
		≥30% sand & gravel	% sand ≥ % gravel	% sand < % gravel	Organic SOIL with Gravel	
				<15% gravel	Sandy Organic SOIL	
				>15% gravel	Sandy Organic SOIL with Gravel	
			% sand < % gravel	<15% sand	Gravelly Organic SOIL	
	>15% sand	Gravelly Organic SOIL with Sand				

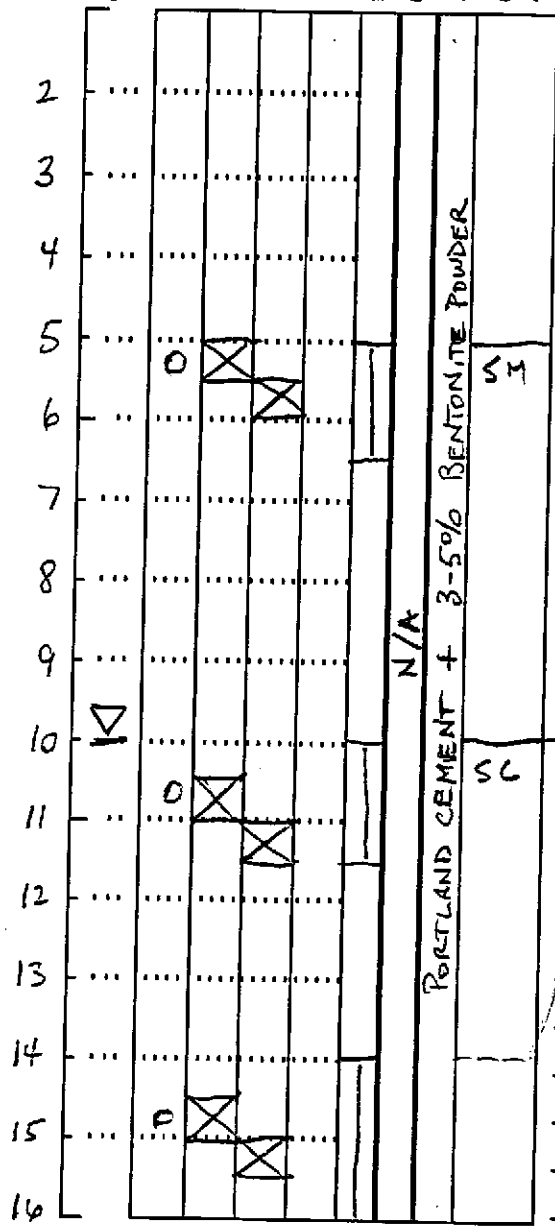


SIERRA

PROJECT NO: 4-719-12
 BORING NO: B-18

Water levels
 OVM (ppmv)
 OVM interval
 Chem. analysis
 * Blows
 Recovery
 Casing
 Annular Material
 Contact & ASTM Symbols

DESCRIPTION



3-4" ASPHALT

Silt SAND (SM), DARK BROWN, MOIST
~55% F. TO FINE SAND, ~20% CLAY,
~25% SILT, LOW EST. K, NO ODOR

CLAY SAND (SC), DK. BROWN W/
GRAY + YELLOW, WET, ~50% FINE
TO VERY COARSE SAND, ~20% CLAY
~20% SILT, (TO 1/4") W/ < 5% GRAVELS,
MOD EST. K, NO ODOR

* NOTE: SAMPLES DRIVEN W/ HYDRAULIC
HAMMER - NO DENSITY / COHESION DATA
WAS AVAILABLE

BOH @ 16.0 FEET BGS

Logged by: MARIO STERNAD / JIM GREEN
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 9-24-96
 Auger size: 2-INCH
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A

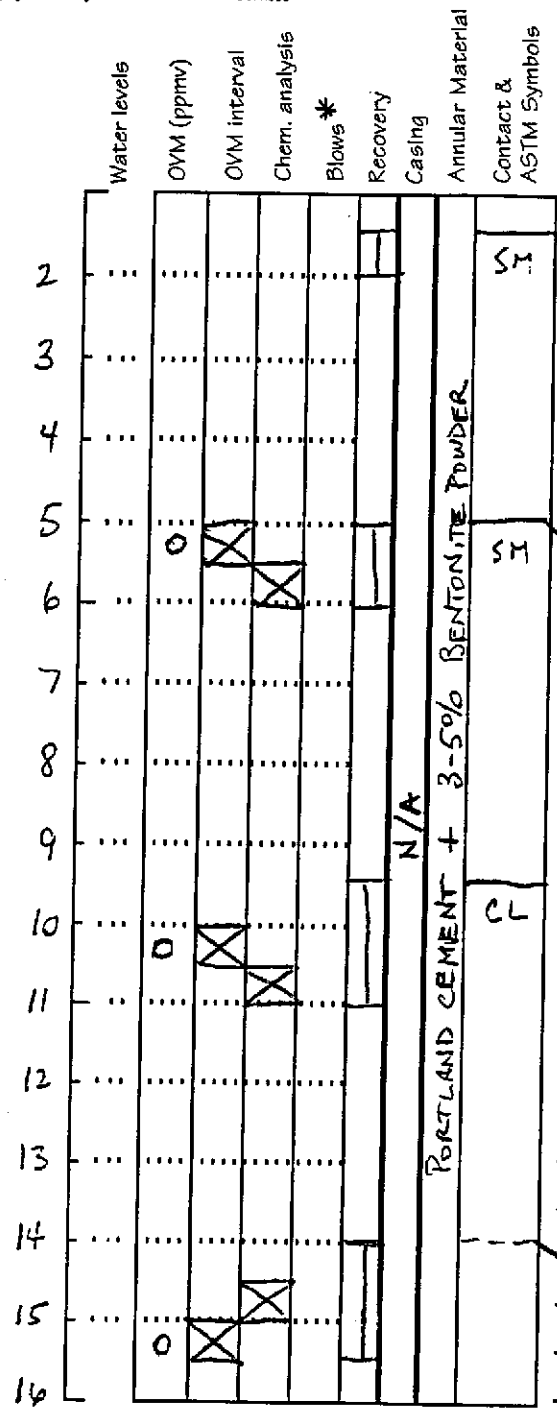
Well Head Completion:
 Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE

INITIAL level date/time: 10.0' 9:00 AM
 FINAL level date/time: 9/24/96

Well installation details:
 Grout interval: 0-16
 Bentonite seal interval: -
 Sand interval: -
 Screened interval: -
 Bentonite plug interval: -



PROJECT NO: 4-719-12
 BORING NO: B-19



Logged by: MARIO STERNAD / JIM GREEN INITIAL level
 Drilling Co.: VIRONEX date/time 10:40am
 Driller: JOHN MCASSEY 20.0' @ 24lb
 Date(s) Drilled: 9-24-96
 Auger size: 2-INCH FINAL level
 Sampler type: GEO PROBE date/time _____
 Casing Dia., type & schedule: N/A

Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE

Well installation details:
 Grout interval: 0-27
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

PROJECT NO: 4-719-12

BORING NO: B-19



SIERRA

Water levels	OMV (ppmv)	OMV interval	Chem. analysis	Blows*	Recovery	Casing	Annular Mat.	Contact & ASTM Symbols
16								
17								
18								
19								
20	0			X				SM
21				X				
22							N/A	
23								
24								
25	0			X				
26				X				
27								
28								
30								
31								
32								
33								
34								
35								

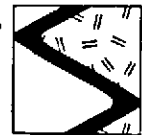
DESCRIPTION

SILT SAND (SM), LIGHT YELLOW MED. GRAY, WET, ~60% V.F. TO FINE SANDS, ~15 CLAY, ~25% SILT, LOW EST. K, NO ODOR

SAME COMPOSITION AS ABOVE

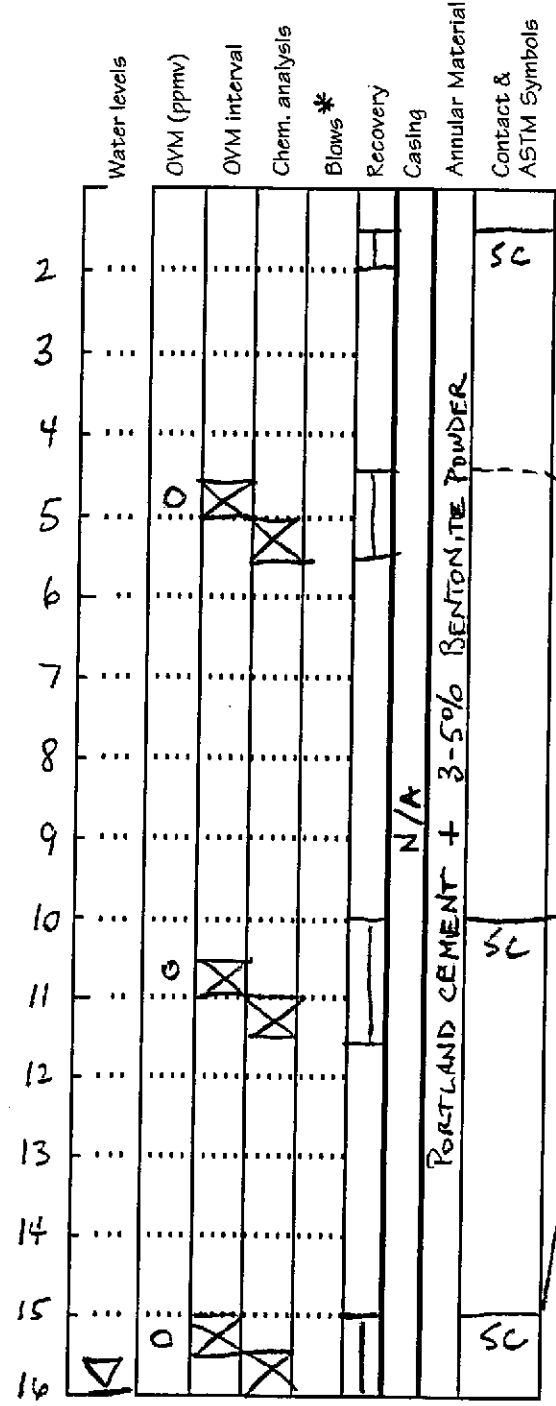
BOH @ 27.0' BGS

* NOTE: SAMPLES WERE DRIVEN WITH A HYDRAULIC HAMMER - NO DENSITY / COHESION DATA WAS AVAILABLE



SIERRA

PROJECT NO: 4-719-12
 BORING NO: B-20



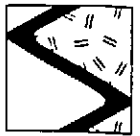
DESCRIPTION

3-4" ASPHALT
 SC
 Clayey SAND (SC), BROWN-BLACK, DAMP
 ~50% V. FINE SAND, ~35% CLAY, ~15%
 SILT (W/SOME COARSE) SAND Low EST. K.
 No odor
 SAME COMPOSITION AS ABOVE
 SC
 Clayey SAND (SC), LIGHT BROWN
 MOTTLED ORANGE, DAMP, ~60% FINE
 Sand, ~30% CLAY ~10% SILT W/
 ANGULAR GRAVELS, LOW EST. K. No odor
 Clayey SAND (SC), GRAYISH BROWN w/
 MOTTLED YELLOW, DAMP, ~50% FINE
 SAND ~25% CLAY ~25% SILT, LOW
 EST. K. No odor

Logged by: MARIO STERNAD / Jim Green INITIAL level
 Drilling Co.: VIRON EX date/time
 Driller: JOHN McASSEY 16.0' 2:40pm
 Date(s) Drilled: 9-24-96 9/24/96
 Auger size: 2-INCH FINAL level
 Sampler type: GEO PROBE date/time
 Casing Dia., type & schedule: N/A

Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE

Well installation details:
 Grout interval: 0-31.5
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

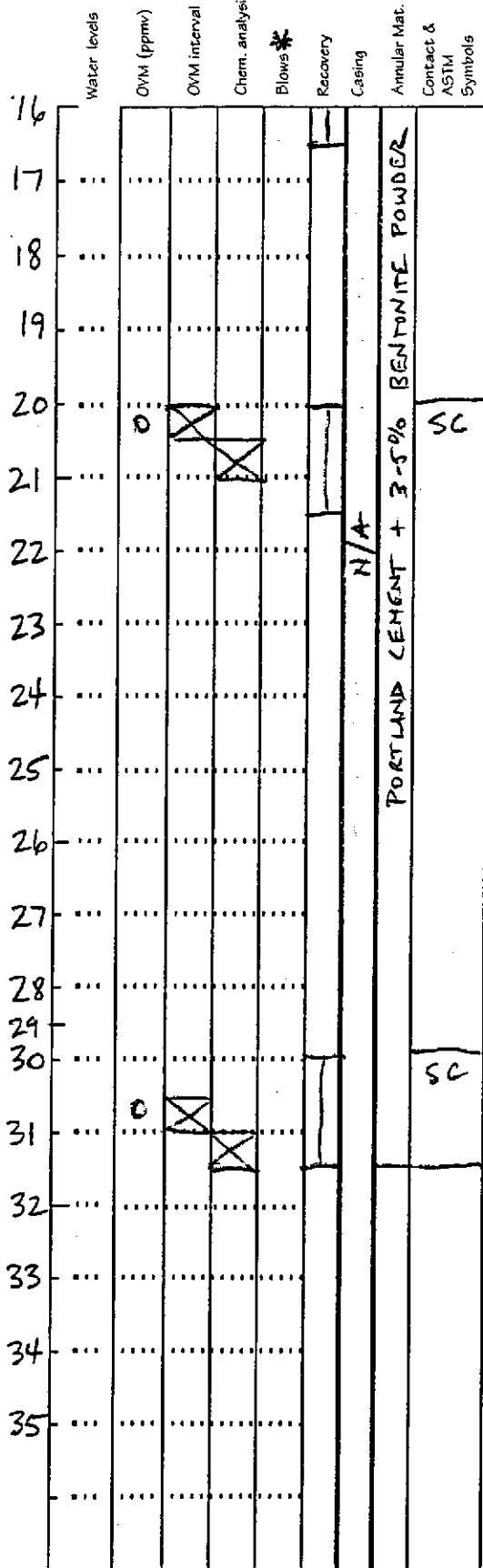


PROJECT NO: 4-719-12

BORING NO: B-20

DESCRIPTION

SIERRA



SAME COMPOSITION AS ABOVE

Clayey SAND (SC), REDDISH BROWN, WET
 85% FINE TO VERY COARSE SAND, 10%
 CLAY, 5% SILT, MOD EST. K, NO ODOR

SAME COMPOSITION AS ABOVE

BOH 31.5' BGS

* NOTE: SAMPLES WERE DRIVEN WITH
 A HYDRAULIC HAMMER - NO DENSITY/
 COHESION DATA WAS AVAILABLE



SIERRA

PROJECT NO: 4-719-12
 BORING NO: B-21

Water levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								
4								
5								
6	0	X		X			BENTONITE POWDER	SC
7								
8								
9							N/A	
10								
11	0	X		X			PORTLAND CEMENT + 3-5% BENTONITE POWDER	ML
12								
13								
14								
15								
16	0	X		X				SC

DESCRIPTION

3-4" ASPHALT, 2" CONCRETE

Clayey SAND (SC), BROWN-BLACK DAMP
 ~50% V. FINE W/ CONGOLE SAND, ~35%
 CLAY, ~15% SILT, LOW EST. K, NO GRA

Sandy SILT (ML), DK GRAY DAMP,
 ~20% CLAY, ~50% SILT, ~30%
 FINE TO V. F. SAND, LOW EST. K, NO
 OSOR

Clayey SAND (SC), GRAYISH-BROWN, WE
 ~85% F. TO LARGE POORLY SORTED SAND

Logged by: MARIO STERNAD/TJM
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 9-24-96
 Auger size: 2-INCH
 Sampler type: GEOPROBE
 Casing Dia., type & schedule: N/A

INITIAL level date/time: NONE
 FINAL level date/time: NONE

Well Head Completion:
 Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE

Well installation details:
 Grout interval: 0-36
 Bentonite seal interval: -
 Sand interval: -
 Screened interval: -
 Bentonite plug interval: -

PAGE 1 OF 2



PROJECT NO: 4-719-12

BORING NO: B-21

DESCRIPTION

Water levels	OVM (ppmv)	OVM interval	Chem. analysis	Blows *	Recovery	Casing	Annular Mat.	Contact & ASTM Symbols
16				X				
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30	0			X				SC
31				X				
32								
33								
34								
35								
36								

PORTLAND CEMENT + 3-5% BENTONITE POWDER

N/A

W/ ANGULAR GRAVEL TO 1", 40% LLTY, 50% SILT, MOD. EST. K, NO ODOR

Clayey SAND, LIGHT YELLOWISH BROWN, DMP, ~70% F. TO COARSE SAND (TO 1/4"). POORLY SORTED, 20% CLAY, 10% SILT, LOW EST. K, NO ODOR

* NOTE: SAMPLES WERE DRIVEN WITH A HYDRAULIC HAMMER - NO DENSITY / COHESION DATA WAS AVAILABLE

SAME COMPOSITION AS ABOVE

Bot @ 36.0' BGS



SIERRA

PROJECT NO: 4-719-12

BORING NO: B-22

DESCRIPTION

Water levels	OVM (ppmv)	OVM interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols	DESCRIPTION
									3-4" ASPHALT
2								SM	Silty SAND (SM), DK GRAY, DAMP.
3									~60% F. TO V.F. SAND ~10% CLAY,
4									~30% SILT, LOW EST. K NO ODO2
5									
6								ML	SANDY SILT (ML) DARK GRAY, DAMP, ~40%
7									SILT ~20% CLAY ~40% V.F. SAND
8									LOW EST. K. NO ODO2
9							N/A		
10								SC	CLAY SAND (SC), LIGHT YELLOW, DAMP
11									~75% FINE TO VERY COARSE SANDS TO
12									1/4" ~15% CLAY ~10% SILT, LOW EST. K
13									NO ODO2
14									
15									SAME COMPOSITION AS ABOVE - MORE CLAY
16									

Logged by: MARIO STERNAD
 Drilling Co.: VIRONEX
 Driller: JOHN MCASSEY
 Date(s) Drilled: 9-24-96
 Auger size: 2-INCH
 Sampler type: GEOPROBE
 Casing Dia., type & schedule: N/A

INITIAL level date/time: NONE
 FINAL level date/time: NONE

Well installation details:
 Grout interval: 0-35.5
 Bentonite seal interval: -
 Sand interval: -
 Screened interval: -
 Bentonite plug interval: -

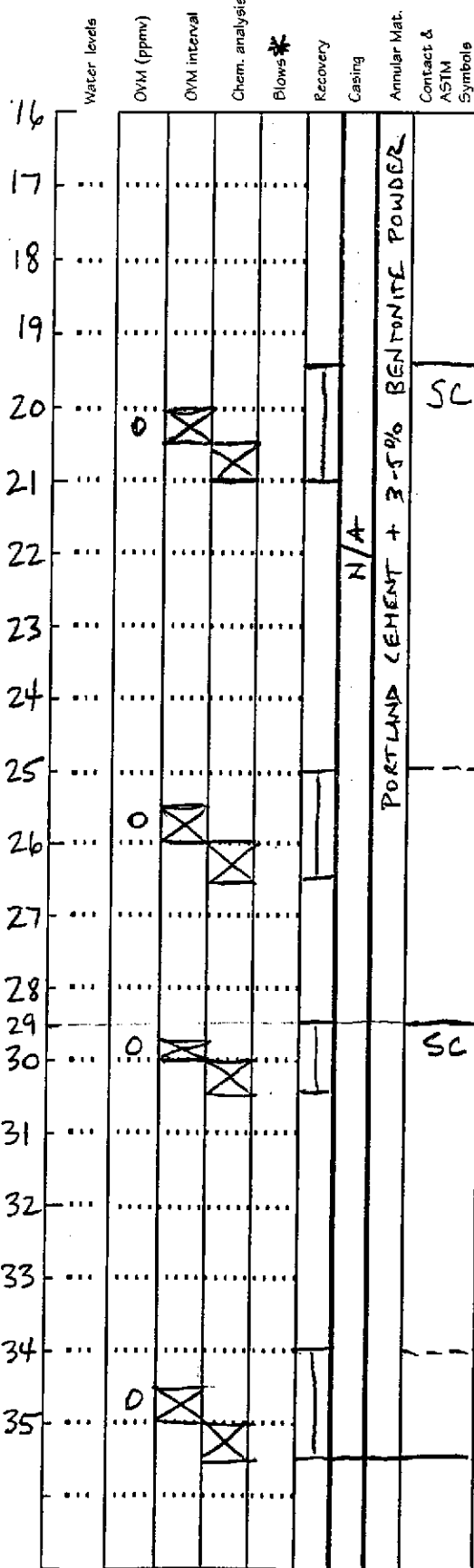
Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE



PROJECT NO: 4-719-12

BORING NO: B-22

DESCRIPTION



SC Clayey SAND (SC), LIGHT REDDISH-BROWN, DAMP, ~85% F. TO VERY COARSE SAND, ~10% CLAY, 5% SILT, LOW EST. K, NO ODOR

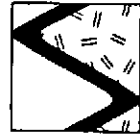
SAME COMPOSITION AS ABOVE W/ 1/2" ANGULAR GRAVELS AND STREAKS OF GREENISH-GRAY COLOR

SC Clayey SAND (SC), LIGHT YELLOWISH-BROWN, DAMP, ~85% POORLY SORTED SAND, ~10% CLAY, ~5% SILT, LOW EST. K, NO ODOR

* NOTE: SAMPLES WERE DRIVEN WITH A HYDRAULIC HAMMER - NO DENSITY / COHESION DATA WAS AVAILABLE

SAME COMPOSITION AS ABOVE

BOH @ 35.5' BGS



PROJECT NO: 4-719-12
 BORING NO: B-23

Water levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								
4								
5	0	X						
6		X						
7								
8								
9							N/A	
10	336	X						SM
11		X						
12								
13								
14								
15								
16								

DESCRIPTION

3-4" ASPHALT

ML SandY SILT (ML), DARK GRAY, DAMP, ~40% SILT, ~20% CLAY, ~40% V.F. SANDS, LOW EST. K, NO ODOR

SM Silty SAND (SM), DARK GRAY, WET, ~80% FINE TO MED. SAND, <5% CLAY, ~20% SILT; MOD. EST K, DISCOLORATION SLIGHT PETROLEUM ODOR

Logged by: MARIO STERNAD / J. GREEN INITIAL level
 Drilling Co.: VIRONEX date/time
 Driller: JOHN MCASSEY
 Date(s) Drilled: 9-25-96 10.0' 9:00am
 Auger size: 2-INCH 9/25/96
 Sampler type: GEO PROBE FINAL level
 Casing Dia., type & schedule: N/A date/time

Well Head Locking cap & traffic-rated vault
 Completion: Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE

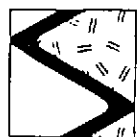
Well installation details:

Grout interval: 0-16.5
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

PAGE 1 OF 2

PROJECT NO: 4-719-12

BORING NO: B-23



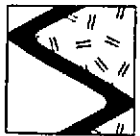
SIERRA

Water levels	QVM (ppmv)	QVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Mat.	Contact & ASTM Symbols
16	150	X	X					SM
17								
18								
19								
20								
21								
22							N/A	
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Silty SAND; GREENISH BROWN, WET,
 ~60% FINE TO COARSE (1/4") POORLY
 SORTED SAND, ~30% SILT, ~10% CLAY,
 MOD. EST. PERM., SLIGHT PETROLEUM ODDOR

BOH @ 16.5' BGS

* NOTE: SAMPLES WERE DRIVEN WITH
 A HYDRAULIC HAMMER - NO DENSITY/
 COHESION DATA WAS AVAILABLE



SIERRA

PROJECT NO: 4-719-12

BORING NO: B-24

DESCRIPTION

Water levels	OVM (ppmv)	OVM interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								
4								
5	0	X						SM
6		X						
7								
8								
9							N/A	
10								ML
11	0	X						
12		X						
13								
14								
15	0	X						CL
16		X						

3-4" ASPHALT

Silty SAND (SM), DARK BROWN, MOIST, ~55% V.F. TO FINE SANDS, ~20% CLAY, ~25% SILT, LOW EST. K, NO ODOR

Sandy SILT (ML), LIGHT YELLOWISH-BROWN, DAMP, ~50% SILT, ~5% CLAY, ~45% V.F. SAND, LOW EST. K, NO ODOR

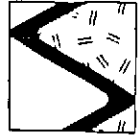
Sandy lean CLAY (CL), LT. YELLOWISH-GRAY, DAMP, ~35% CLAY, ~30% SILT, ~35% F. TO V.F. SANDS, LOW EST. K, NO ODOR

Logged by: MARIO STERNAD / JIM AREEN INITIAL level date/time
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 9-25-96 NONE
 Auger size: 2-INCH FINAL level date/time
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A NONE

Well installation details:

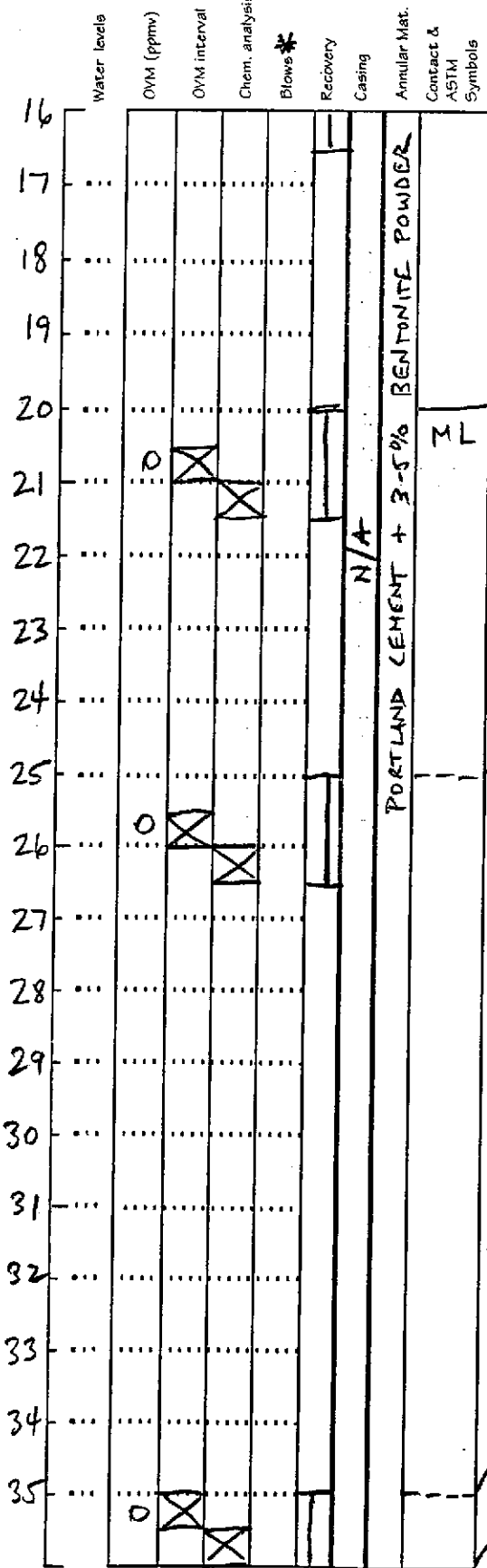
Grout interval: 0-36
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GRAOUTED TO SURFACE



PROJECT NO: 4-719-12
 BORING NO: B-24
 DESCRIPTION

SIERRA



SAME COMPOSITION AS ABOVE

ML

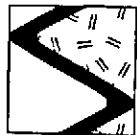
SILTY SAND (ML), LT. YELLOWISH BROWN, $D_{10} = 0.075$
 ~65% V.F. TO VERY COARSE SANDS (TO 1/8")
 ~30% SILT, ~5% CLAY, MOD EST. K,
 NO ODOR

SAME COMPOSITION AS ABOVE

* NOTE: SAMPLES WERE DRIVEN WITH
 A HYDRAULIC HAMMER - NO DENSITY/
 COHESION DATA WAS AVAILABLE

SAME COMPOSITION AS ABOVE

BOH @ 36.0' BGS



SIERRA

PROJECT NO: 4-719-12
 BORING NO: B-25

Water levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								
4								
5	0	X						SM
6		X						
7								
8								
9							N/A	
10	0	X						CL
11		X						
12								
13								
14								
15	0	X						SC
16		X						

DESCRIPTION

3-4" ASPHALT

Silty SAND (SM), DARK BROWN w/ MOTTLED YELLOW, DAMP, ~50% FINE TO MEDIUM SANDS, POORLY SORTED, ~20% CLAY, ~30% SILT, LOW EST. PERMEABILITY, NO ODOR

Sandy Lean CLAY (CL), LIGHT YELLOWISH BROWN, DAMP, ~40% F. SANDS, ~50% CLAY, ~10% SILT, LOW EST. K, NO ODOR

Clayey SAND (SC), BROWNISH-GRAY w/ ORANGE, DAMP, ~50% FINE w/ SOME COARSE SAND, ~30% CLAY, ~20% SILT, LOW EST. K, NO ODOR

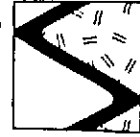
Logged by: MARIO STERNAD / JIM GREEN INITIAL level date/time
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 9-25-96
 Auger size: 2-INCH FINAL level date/time
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A

Well installation details:
 Grout interval: 0-36.0
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

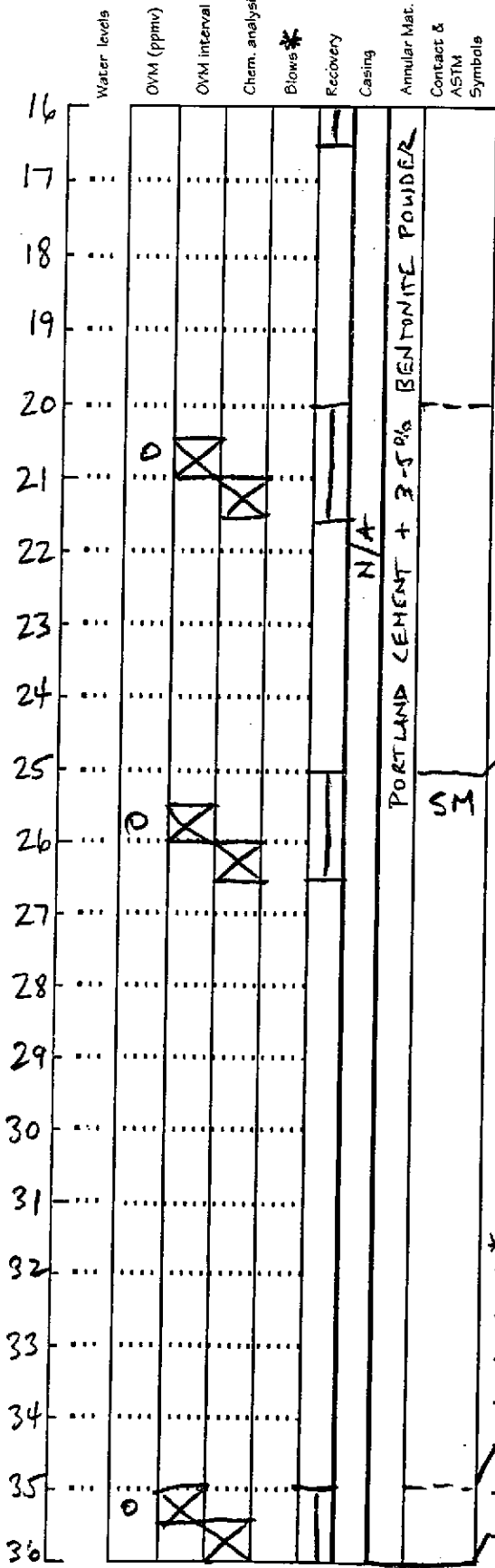
Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GRouted TO SURFACE

PROJECT NO: 4-719-12

BORING NO: B-25



SIERRA



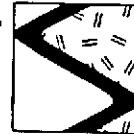
SAME COMPOSITION AS ABOVE

SAME COMPOSITION AS ABOVE

SILTY SAND, LIGHT YELLOW AND MED. BROWN, RED, DAMP, ~65% F. TO MEDIUM SANDS, ~30% SILT, ~5% CLAY, LOW EST. K, NO ODOR

* NOTE: SAMPLES WERE DRIVEN WITH A HYDRAULIC HAMMER - NO DENSITY / COHESION DATA WAS AVAILABLE

SAME COMPOSITION AS ABOVE - MORE SILT, V.F. TO FINE SAND
BOT AT 36.0 FT BGS



SIERRA

PROJECT NO: 4-719-12
 BORING NO: B-26

Water levels	QVM (ppmv)	QVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								
4								
5								
6	0	X					BENTONITE POWDER	SM
7								
8								
9							N/A	
10								
11	0	X					PORTLAND CEMENT + 3-5% BENTONITE POWDER	SC
12								
13								
14	▽							
15	0	X						
16								

DESCRIPTION

3-4" ASPHALT

Silt SAND (SM), DK BROWN w/ MOTTLED YELLOW, DAMP, ~50% F. TO MED SANDS POORLY SORTED, ~20% CLAY ~30% SILT, LOW EST. K, NO ODOR

CLAYED SAND (SC), LT. YELLOWISH-BROWN, MOIST, ~60% F. TO V. COARSE SANDS w/ SUBANGULAR GRAVELS TO 1/4", ~25% CLAY, ~15% SILT, MOD EST. K, NO ODOR

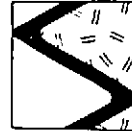
SAME COMPOSITION, WET

Logged by: MARIO STERNAD / JIM GREEN INITIAL level date/time
 Drilling Co.: VIRON EX
 Driller: JOHN McASSEY
 Date(s) Drilled: 9-25-96 14.0 9-25-96
 Auger size: 2-INCH FINAL level date/time
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A

Well Head Completion:
 Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GROUTED TO SURFACE

Well installation details:
 Grout interval: 0-36.0
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

PAGE 1 OF 2

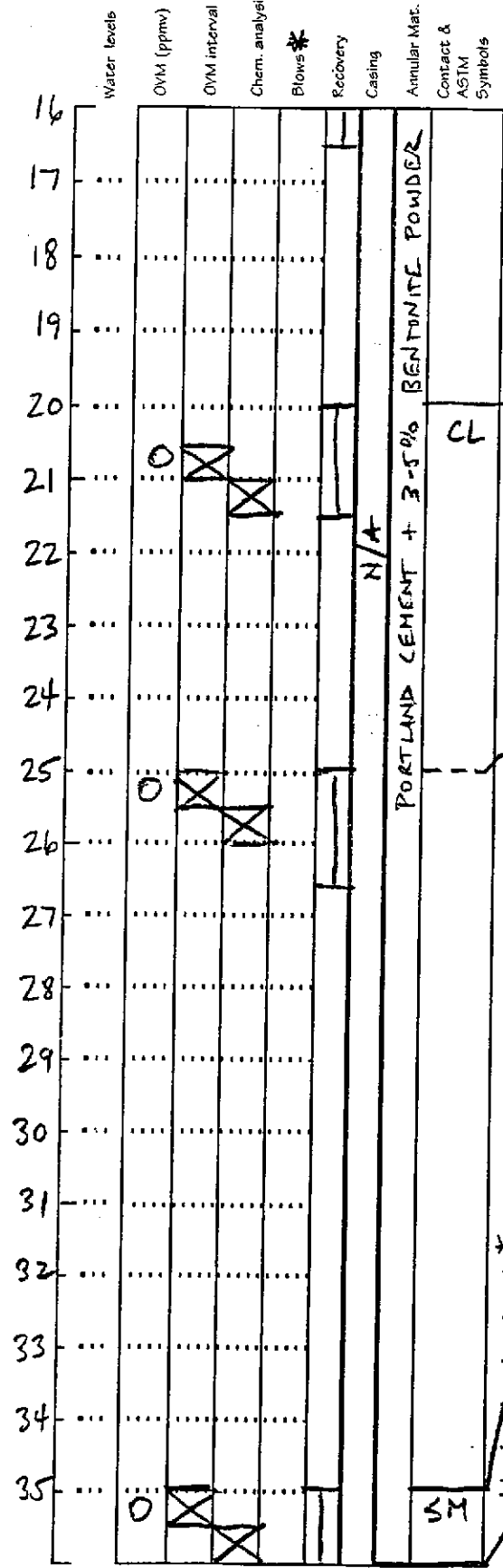


SIERRA

PROJECT NO: 4-719-12

BORING NO: B-26

DESCRIPTION



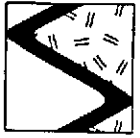
SAME COMPOSITION AS ABOVE

CL Sandy Lean CLAY (CL), LIGHT YELLOWISH BROWN GRAY DAMP, ~40% CLAY, ~30% SILT, ~30% V.F TO MEDIUM SANDS. LOW EST. NO ODOR

SAME COMPOSITION

* NOTE: SAMPLES WERE DRIVEN WITH A HYDRAULIC HAMMER - NO DENSITY / COHESION DATA WAS AVAILABLE

Silty SAND (SM), DARK BROWN, NET, ~70% MEDIUM TO VERY COARSE SAND, 10% CLAY, ~20% SILT, MOD. ESTK. (10'4") NO ODOR BOT @ 36.0' BGS



PROJECT NO: 4-719-12

BORING NO: B-27

SIERRA

Water levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols	DESCRIPTION
									3-4" ASPHALT
2									
3									
4									
5	0	X						SM	Silty SAND (SM), DK. BROWN w/ MOTTLED YELLOW, DAMP, ~50% F. TO MED. SANDS, POORLY SORTED ~20% CLAY, ~30% SILT. LOW EST. K. No odor
6		X							
7									
8									
9							N/A		
10									
11	0	X						SM	Silty SAND (SM), LT. YELLOWISH BROWN, DAMP, ~60% F. TO MED. SANDS, ~30% SILT, ~10% CLAY, LOW EST. K. No odor
12		X							
13									
14									
15									
16	0	X						ML	Silty SILT (ML), LT. YELLOWISH BROWN, DAMP, ~50% SILT, ~15% CLAY, ~35% V.F TO MEDIUM SANDS. LOW EST. K. No odor

Logged by: MARIO STERNAD / J.M.
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 9-25-96
 Auger size: 2-INCH
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A

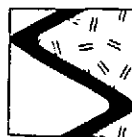
INITIAL level date/time: 19.0' 11:45am 9-25-96
 FINAL level date/time: —

Well installation details:

Grout interval: 0-26.5
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

Well Head Completion:

Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GRAOUTED TO SURFACE

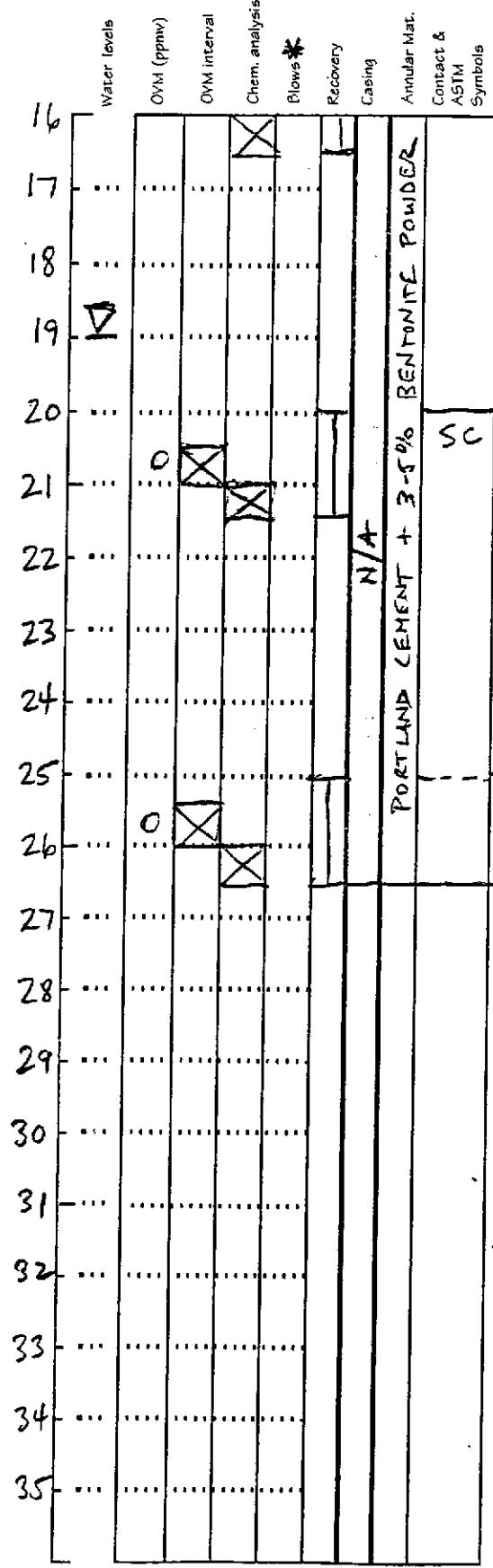


PROJECT NO: 4-719-12

BORING NO: B-27

DESCRIPTION

SIERRA



SAME COMPOSITION AS ABOVE

SC
 Clean SAND, LT. BROWN, WET ~75%
 FINE TO VERY COARSE SANDS (SMALL TO 1/4")
 ~15% CLAY ~10% SILT, MOD EST K.
 NO ODOR

SAME COMPOSITION AS ABOVE

Bot @ 26.5' BUS

* NOTE: SAMPLES WERE DRIVEN WITH
 A HYDRAULIC HAMMER - NO DENSITY/
 COHESION DATA WAS AVAILABLE



PROJECT NO: 4-719-12
 BORING NO: B-28

Water levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								SC
3							PORTLAND CEMENT + 3-5% BENTONITE POWDER	
4								
5	0	X	X					CL
6								
7								
8								
9							N/A	SC
10	0	X	X					
11								
12								
13								
14	0	X	X					
15								
16								

DESCRIPTION

3-4" ASPHALT

Clayey SAND (SC), MED. BROWN, DAMP, ~60% FINE SANDS, ~20% CLAY, ~20% SILT, LOW EST. PERMEABILITY, NO ODOR

Sandy CLAY (CL), LIGHT BROWN, DAMP, ~40% CLAY, ~20% SILT, ~40% FINE SANDS, LOW EST. PERMEABILITY, NO ODOR

Clayey SAND (SC), LIGHT BROWN W/ ORANGE GRAY, DAMP, ~60% POORLY SORTED FINE TO COARSE SAND, ~20% CLAY, 20% SILT, MODERATE ESTIMATED PERMEABILITY, NO ODOR

SAME COMPOSITION - MORE SAND W/ SUB-ANGULAR GRAVELS TO 3/4" (~80%)

Logged by: MARIO STERNAD
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 10-31-96
 Auger size: 2-INCH
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A

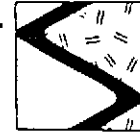
INITIAL level date/time: 10/31/96
24.0 @ 9:20 AM

FINAL level date/time: ---

Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GRAOUTED TO SURFACE

Well installation details:

Grout interval: 0-26
 Bentonite seal interval: ---
 Sand interval: ---
 Screened interval: ---
 Bentonite plug interval: ---



PROJECT NO: 4-719-12

BORING NO: B-28

DESCRIPTION

SIERRA

Water levels	OVM (ppmv)	OVM interval	Chem. analysis	Flows *	Recovery	Casing	Annular Mat.	Contact & ASTM Symbols
16								
17								
18								
19								
20	○	⊗						SC
21								
22								
23								
24	▽							SC
25	○	⊗						SC
26								
27								
28								
30								
31								
32								
33								
34								
35								

PORTLAND CEMENT + 3.5% SERRONITE POWDER

Clayey SAND (SC), LIGHT ORANGE BROWN, VERY MOIST, ~75% FINE TO COARSE BORELY SORTED SAND W/ SUB-ANGULAR GRAVELS TO 3/4", ~20% CLAY, 5% SILT. MOD. EST. PERMEABILITY. NO ODOR

Clayey SAND (SC), LIGHT BROWN, WET, ~65% FINE TO COARSE SAND, ~20% CLAY, 15% SILT. MOD. EST. K, NO ODOR

SAME AS ABOVE - MED. REDDISH-BROWN W/ GRAY, DAMP, MORE CLAY TO BOTT @ ~26.0' BGS (NO ODOR)

* NOTE: SAMPLES WERE DRIVEN WITH A HYDRAULIC HAMMER - NO DENSITY / COHESION DATA WAS AVAILABLE

40%



PROJECT NO: 4-719-12
 BORING NO: B-29

Water levels	OVM (ppmv)	OVM interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								SC
4								
5	0	X						SC
6								
7	0	X						
8								
9	0	X					N/A	
10								
11								
12								
13								
14	0	X						CL
15								
16								

DESCRIPTION

3-4" ASPHALT
 GRAVEL ROAD BED TO ~2.5 FEET BGC

Clayey SAND (SC), Black, DAMP ~50%
 VERY FINE SAND, ~40% CLAY, ~10% SILT,
 LOW EST. K, SLIGHT PETROLEUM ODOR

Clayey SAND (SC), DARK BROWN, DAMP, ~50%
 POORLY SORTED FINE TO COARSE SAND, ~30%
 CLAY ~20% SILT, LOW EST. K, NO ODOR
 ADD GRAVELS TO 1" W/DEPTH

ADD MED. BROWN MIXED W/ LIGHT YELLOW
 BROWN, MORE CLAY, MORE COARSE SAND
 NO GRAVELS

Sandy CLAY (CL), LIGHT GRAYISH BROWN
 W/ MOTTLED ORANGE, DAMP, ~65% CLAY
 ~15% SILT, ~20% VERY FINE SANDS, LOW
 EST. K, NO ODOR

Logged by: MARIO STERNAD
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 10-31-96
 Auger size: 2-INCH
 Sampler type: GEO PROBE
 Casing Dia., type & schedule: N/A

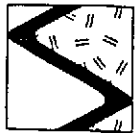
INITIAL level date/time: 11:15 am 10/21/96
 FINAL level date/time: —

Well Head Completion: Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GRAOUTED TO SURFACE

Well installation details:

Grout interval: 0-26
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

PAGE 1 OF 2



PROJECT NO: 4-719-12
 BORING NO: B-29

DESCRIPTION

SIERRA

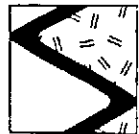
Water levels	OVM (ppmv)	OVM interval	Chem. analysis	Blows *	Recovery	Casing	Annular Mat.	Contact & ASTM Symbols
16								
17								
18								
19								
20	0	X	X					SC
21								
22							N/A	
23								
24	▽							
25	0	X	X					
26								
27								
28								
30								
31								
32								
33								
34								
35								

Clayey SAND (SC), LIGHT BROWN MOTTLED
 BLACK LAMM AND ORANGE, MOIST, ~65%
 FINE (SOME SPARSE COARSE) SAND, ~15%
 LAMM, ~20% SILT, LOW EST. K, NO ODR

SAME COMPOSITION AS ABOVE - MED. BROWN,
 WET, MORE SAND

Bot @ 26.0 FEET BGS

* NOTE: SAMPLES WERE DRIVEN WITH
 A HYDRAULIC HAMMER - NO DENSITY/
 COHESION DATA WAS AVAILABLE



SIERRA

PROJECT NO: 4-719-12
 BORING NO: B-30

Water levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Material	Contact & ASTM Symbols
2								
3								
4								
5	0	X		X			CL	
6								
7								
8								
9	0	X		X			SC	
10								
11								
12								
13								
14								
15	0	X		X				
16								

DESCRIPTION

3-4" ASPHALT

Sandy CLAY, LIGHT GRAY-GREEN, DAMP
 ~40% CLAY, ~30% SILT, ~30% FINE
 TO COARSE (1/2") SAND, LOW EST. K.
 NO ODOR

CLAYEY SAND, LIGHT YELLOWISH-BROWN,
 DAMP. ~60% FINE TO COARSE POORLY
 SORTED SANDS, ~20% CLAY, ~20% SILT
 LOW EST. K, NO ODOR

SAME COMPOSITION - DARKER ORANGE, W/
 SOME MOTTLED REDDISH MEDIUM SAND
 AND ETC ANGULAR GRAVELS TO 1/2"

Logged by: MARIO STERNAD
 Drilling Co.: VIRONEX
 Driller: JOHN McASSEY
 Date(s) Drilled: 10-31-96
 Auger size: 2-INCH
 Sampler type: GEOPROBE
 Casing Dia., type & schedule: N/A

INITIAL level
 date/time
20.0' 1:30pm
10/31/96

FINAL level
 date/time

Well installation details:

Grout interval: 0-26
 Bentonite seal interval: —
 Sand interval: —
 Screened interval: —
 Bentonite plug interval: —

Well Head Completion:

Locking cap & traffic-rated vault
 Locking stovepipe w/traffic-rated vault
 None Other GRAOUTED TO SURFACE



PROJECT NO: 4-719-12

BORING NO: B-30

DESCRIPTION

SIERRA

Water Levels	OVM (ppmv)	OVM Interval	Chem. analysis	Blows *	Recovery	Casing	Annular Mat.	Contact & ASTM Symbols
16								
17								
18								
19								
20	▽	○	⊗	⊗				SC
21				⊗				
22							N/A	
23								
24								
25		○	⊗	⊗				
26								
27								
28								
30								
31								
32								
33								
34								
35								

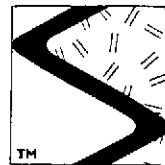
PORTLAND CEMENT + 3-5% BENTONITE POWDER

CLAYEN SAND, MEDIUM YELLOWISH-BROWN
W/ MOTTLED RED. WET ~60% POORLY
SORTED F. TO COARSE SAND ~85% CLAY
~15% SILT, W/ GRAVELS TO 1". LOW EST.
K. NO ODOOR

SAME COMPOSITION, SOME GRAY, DAMP
FINE TO MED. SANDS, NO GRAVELS

Bot @ 26.0' CGS

* NOTE: SAMPLES WERE DRIVEN WITH
A HYDRAULIC HAMMER - NO DENSITY/
COHESION DATA WAS AVAILABLE



SIERRA

APPENDIX E
CHAIN OF CUSTODY DOCUMENTS AND
LABORATORY ANALYTIC REPORTS

~~XXXXXXXXXX~~
~~XXXXXXXXXX~~
~~XXXXXXXXXX~~
 FAX (415) 842-3581

Facility Number Telegraph Business Park
 Facility Address 5427 Telegraph Ave. Oakland, CA
 Consultant Project Number 4-719-12
 Consultant Name Sierra Environmental Services
 Address PO Box 2546 MT2 CA 94553
 Project Contact (Name) Jim Green
 (Phone) 510-370-1280 (Fax Number) 510-370-7959

Client Contact (Name) Jan Legallet
 (Phone) _____
 Laboratory Name SAL
 Laboratory Release Number _____
 Samples Collected by (Name) Jim Green
 Collection Date 9/24/96 + 9/25/96
 Signature J. Green

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Lead (Yes or No)	Analyses To Be Performed										Remarks	
								BTEX + Toluene (8020) BTX ONLY	TPH Diesel Standard (8015) Standard only	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd, Cr, Pb, Zn, Ni (CAP or AA)				
B-21	Q16'	1	S	G	9/21/96	NONE	Y	✓	✓				✓						Hold
B-22	Q15.5'	1	S	G	9/24/96	NONE		✓	✓				✓						
B-23	Q10.5'	1	S	G	9/25/96	NONE		✓	✓				✓						
B-23	Q16'	1	S	G	9/25/96	NONE		✓	✓				✓						Hold
B-24	Q16'	1	S	G	9/25/96	NONE		✓	✓				✓						

Please Initial: _____
 Samples Stored in ice. _____
 Appropriate containers. _____
 Samples preserved _____
 VOA's without headspace _____
 Comments: _____

Note:
~~Do Not Bill~~
~~TB-LB Samples~~

Relinquished By (Signature) <u>Jim Green</u>	Organization <u>SES</u>	Date/Time <u>2:00 9/26/96</u>	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice) 24 Hrs. 48 Hrs. 5 Days 10 Days As Contracted
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature) <u>Legi SAL</u>	Organization	Date/Time <u>9/26/96 2:00</u>	

COC-3.DWG/03 81/MCH

21927

Chain-of-Custody Record

Facility No. _____ Facility Address <u>Telegraph Business Pk. Oakland CA</u> Consultant Project Number <u>4-719-12</u> Consultant Name <u>SIERRA ENVIRONMENTAL SERVICES</u> Address <u>P.O. Box 2546, Martinez, CA 94553</u> Project Contact (Name) <u>Jim Green</u> (Phone) <u>(510) 370-1280</u> (FAX Number) <u>(510) 370-7959</u>	Client Contact (Name) <u>Jon Legallet</u> (Company) <u>Normandy Associates</u> (Phone) _____ Laboratory Name <u>S.A.L.</u> Samples Collected by (Name) <u>Jim Green</u> Collection Date <u>9/25/96</u> Signature <u>Jim Green</u>
--	---

Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED										Remarks		
								BTEX + TPH Gas (602/8020 + 8015/5030) BTEX ONLY	TPH (8015/3550/3510) STOP DRAB ONLY	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (6011/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)					
	B-25 2lb/1		S	G		NONE	Y	✓	✓				✓							analyze
								Please Initial: _____ Samples Stored in Ice. _____ Appropriate containers _____ Samples preserved _____ VOI's without headspace _____ Comments: _____ _____ _____												

Relinquished By (Signature) <u>Jim Green</u>	Organization <u>SES</u>	Date/Time <u>9/26/96</u>	Received By (Signature) <u>[Signature]</u>	Organization <u>[Signature]</u>	Date/Time <u>9/26/96</u>	Turn Around Time (Circle One) 24 hours 48 hours <u>6 days</u> 10 days As Contracted
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature) <u>[Signature]</u>		Date/Time <u>10/96</u>	

21918

Chain-of-Custody Record

Facility No. <u>Telegraph Business PK</u> Facility Address <u>5427 Telegraph Ave. Oakland</u> Consultant Project Number <u>4-779-12</u> Consultant Name <u>SIERRA ENVIRONMENTAL SERVICES</u> Address <u>P.O. Box 2546, Martinez, CA 94553</u> Project Contact (Name) <u>Jim Green</u> (Phone) <u>(510) 370-1280</u> (FAX Number) <u>(510) 370-7959</u>	Client Contact (Name) <u>Jon Legallet</u> (Company) <u>Normandy Associates</u> (Phone) _____ Laboratory Name <u>SAL</u> Samples Collected by (Name) <u>Jim Green</u> Collection Date <u>9/24/96 and 9/25/96</u> Signature <u>Jim Green</u>
---	--

Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED										Remarks
								BTEX + THC ONLY (602/8020 + 8015/5030)	TPH Standard THC solvent (8015/5550/3510) ONLY	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)			
B-18	4	W	G	9/24/96 9:40	HCL/None	Y	✓	✓			✓							hold until further notice
B-19	4	W	G	9/24/96 15:20	HCL/None	Y	✓	✓			✓							
B-20	4	W	G	9/24/96 24:40	HCL/None	Y	✓	✓			✓							
B-23	4	W	G	9/25/96 9:00	HCL/None	Y	✓	✓			✓							
B-26	4	W	G	9/25/96 11:20	HCL/None	Y	✓	✓			✓							
B-27	4	W	G	9/25/96 11:45	HCL/None	Y	✓	✓			✓							
TB	3	W	G		HCL	Y	✓											

Please Initial: <u>JKL</u>
Samples stored in ice. <u>Yes</u>
Appropriate containers. <u>Yes</u>
Samples preserved. <u>Yes</u>
VOA's without headspace. <u>Yes</u>
Comments: <u>Temp = 4°C</u>

Relinquished By (Signature) <u>Jim Green</u>	Organization <u>SES</u>	Date/Time <u>9/25/96 6:28 PM</u>	Received By (Signature) <u>Jon Legallet</u>	Organization _____	Date/Time _____	Turn Around Time (Circle One) 24 hours 48 hours 5 days <u>10 days</u> As Contracted
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature) <u>Jon Legallet</u>	Organization	Date/Time <u>9-25-96 18:28</u>	

22038

Chain-of-Custody Record

Facility No. <u>5427 TELEGRAPH AVE, OAKLAND</u> Facility Address _____ Consultant Project Number <u>4-719-12</u> Consultant Name <u>SIERRA ENVIRONMENTAL SERVICES</u> Address <u>P.O. Box 2546, Martinez, CA 94553</u> Project Contact (Name) <u>MARIO STERNAD</u> (Phone) <u>(510) 370-1280</u> (FAX Number) <u>(510) 370-7959</u>	Client Contact (Name) <u>NORMANDY ASSOL</u> (Company) _____ (Phone) _____ Laboratory Name <u>SUPERIOR ANALYTICAL LAB</u> Samples Collected by (Name) <u>MARIO STERNAD</u> Collection Date <u>10-31-96</u> Signature <u>Mario Sternad</u>
--	--

Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED										Remarks	
								BTEX (602/8020)	TPH (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)				
W-B28	6 Vol	W		G	9:10	HCL	Y	✓					✓						
W-328	1 AmL				9:10	NONE			✓										
W-B29	6 Vol				11:30	HCL		✓					✓						
W-B29	1 AmL				11:30	NONE			✓										
W-B30	6 Vol				2:00	HCL		✓					✓						
W-B30	1 AmL	✓		✓	2:00	NONE	✓		✓										

Please Initialed _____
 Samples Stored in ice. 4°C
 Appropriate containers
 Samples preserved _____
 VOA's without headspace
 Comments: _____

Relinquished By (Signature) <u>Mario Sternad</u>	Organization <u>SES</u>	Date/Time <u>11/1/96 0726</u>	Received By (Signature) <u>Gerald W Paulsen</u>	Organization <u>SLC</u>	Date/Time <u>11/01/96 0725</u>	Turn Around Time (Circle One) <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input checked="" type="checkbox"/> 5 DAY <input type="checkbox"/> 10 days <input type="checkbox"/> As Contracted
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature)		Date/Time	



Superior

5005

Analytical Laboratory

Sierra Environmental - Martinez
P.O. Box 2546
Martinez, CA 94553

Date: October 3, 1996

Attn: JIM GREEN

Laboratory Number : 21922

Project Number/Name : 4-719-12
Facility/Site : TELEGRAPH BUSINESS PK
5427 TELEGRAPH AVE.
OAKLAND, CA

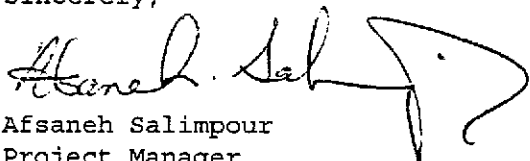
Dear JIM GREEN:

Attached is Superior Analytical Laboratory report for the samples received on September 26, 1996. This report has been reviewed and approved for release. Following the cover letter is the Case Narrative detailing sample receipt and analysis. Also enclosed is a copy of the original Chain-of-Custody record confirming receipt of samples.

Please note that any unused portion of the sample will be discarded after October 26, 1996, unless you have requested otherwise.

We appreciate the opportunity to be of service to you. If you have any questions, please contact our Laboratory at (510) 313-0850.

Sincerely,



Afsaneh Salimpour
Project Manager



Superior

Analytical Laboratory

CASE NARRATIVE

Sierra Environmental - Martinez
Project Number/Name: 4-719-12
Laboratory Number: 21922

Sample Receipt

Five soil samples were received by
Superior Analytical Laboratory on September 26, 1996.

Cooler temperature was 4°C

No abnormalities were noted with sample receiving.

Sample Analysis

The samples were analysed for methods 8015M, 8020, and 8240.

I / I



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Chronology

Laboratory Number 21922

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-21 @ 16'	09/24/96	09/26/96	09/27/96	09/28/96	CI271.21	01
B-22 @ 15.5'	09/24/96	09/26/96	09/27/96	09/28/96	CI271.21	02
B-23 @ 10.5'	09/25/96	09/26/96	09/27/96	09/28/96	CI271.21	03
B-24 @ 16'	09/25/96	09/26/96	09/27/96	09/28/96	CI271.21	05

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CI271.21-01	Method Blank	MB	Soil	09/27/96	09/27/96
CI271.21-02	Laboratory Spike	LS	Soil	09/27/96	09/30/96
CI271.21-03	Laboratory Spike Duplicate	LSD	Soil	09/27/96	09/30/96
CI271.21-04	UPG-3-3	MS 21925-03	Soil	09/27/96	09/28/96
CI271.21-05	UPG-3-3	MSD 21925-03	Soil	09/27/96	09/28/96



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21922-01	B-21 @ 16'	Soil	1.0	-
21922-02	B-22 @ 15.5'	Soil	1.0	-
21922-03	B-23 @ 10.5'	Soil	1.0	-
21922-05	B-24 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	21922-01		21922-02		21922-03		21922-05	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	mg/kg		mg/kg		mg/kg		mg/kg	
Stoddard	ND	10	ND	10	ND	10	ND	10
>> Surrogate Recoveries (%) <<								
Tetracosane	91		100		96		94	



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Analytical Laboratory

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 21922
Method Blank(s)

CI271.21-01
Conc. RL
mg/Kg

Stoddard	ND	10
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>> Surrogate Recoveries (%) <<

Tetracosane	107
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Superior

Analytical Laboratory

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 21922

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
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For Soil Matrix (mg/Kg)
CI271.21 02 / 03 - Laboratory Control Spikes

Diesel:		33.3	41.5/32.3	125/97	50-150	25
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>> Surrogate Recoveries (%) <<
Tetracosane

99/91 50-150

For Soil Matrix (mg/Kg)
CI271.21 04 / 05 - Sample Spiked: 21925 - 03

Diesel:	2	33	37/38	106/109	50-150	3
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>> Surrogate Recoveries (%) <<
Tetracosane

99/105 50-150

Definitions:

ND = Not Detected
 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
 mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Chronology

Laboratory Number 21922

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-21 @ 16'	09/24/96	09/26/96	09/27/96	09/27/96	CI271.37	01
B-22 @ 15.5'	09/24/96	09/26/96	09/27/96	09/27/96	CI271.37	02
B-23 @ 10.5'	09/25/96	09/26/96	09/27/96	09/27/96	CI271.37	03
B-24 @ 16'	09/25/96	09/26/96	10/01/96	10/01/96	CJ011.37	05

QC Samples

QC Batch #	QC Sample ID	Type	Ref.	Matrix	Extract.	Analyzed
CI271.37-05	Laboratory Spike	LS		Soil	09/27/96	09/27/96
CI271.37-06	B-21 @ 16'	MS	21922-01	Soil	09/27/96	09/27/96
CI271.37-07	B-21 @ 16'	MSD	21922-01	Soil	09/27/96	09/27/96
CJ011.37-03	Laboratory Spike	LS		Soil	10/01/96	10/01/96
CJ011.37-05	DS1,DS2 Composite	MS	21933-01	Soil	10/01/96	10/01/96
CJ011.37-06	DS1,DS2 Composite	MSD	21933-01	Soil	10/01/96	10/01/96
CJ011.37-02	Method Blank	MB		Soil	10/01/96	10/01/96
CI271.37-01	Method Blank	MB		Soil	09/27/96	09/27/96



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Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21922-01	B-21 @ 16'	Soil	1.0	-
21922-02	B-22 @ 15.5'	Soil	1.0	-
21922-03	B-23 @ 10.5'	Soil	1.0	-
21922-05	B-24 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	21922-01		21922-02		21922-03		21922-05	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	mg/kg		mg/kg		mg/kg		mg/kg	
Benzene	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Toluene	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Ethyl Benzene	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Xylenes	ND	0.005	ND	0.005	0.044	0.005	ND	0.005

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)	81	87	85	85
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Superior

Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21922

Method Blank(s)

CJ011.37-02		CI271.37-01	
Conc.	RL	Conc.	RL
mg/kg		mg/kg	

Benzene	ND	0.005	ND	0.005
Toluene	ND	0.005	ND	0.005
Ethyl Benzene	ND	0.005	ND	0.005
Xylenes	ND	0.005	ND	0.005

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)	90	73
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Superior

Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21922

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
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For Soil Matrix (mg/kg)
 CI271.37 05 / - Laboratory Control Spikes

Benzene		0.100	0.084	84	65-125	
Toluene		0.100	0.090	90	65-125	
Ethyl Benzene		0.100	0.090	90	65-125	
Xylenes		0.300	0.270	90	65-125	

>> Surrogate Recoveries (%) <<
 Trifluorotoluene (SS)

92 50-150

For Soil Matrix (mg/kg)
 CJ011.37 03 / - Laboratory Control Spikes

Benzene		0.100	0.076	76	65-125	
Toluene		0.100	0.081	81	65-125	
Ethyl Benzene		0.100	0.082	82	65-125	
Xylenes		0.300	0.250	83	65-125	

>> Surrogate Recoveries (%) <<
 Trifluorotoluene (SS)

87 50-150

For Soil Matrix (mg/kg)
 CI271.37 06 / 07 - Sample Spiked: 21922 - 01

Benzene	ND	0.100	0.067/0.078	67/78	65-125	15
Toluene	ND	0.100	0.071/0.083	71/83	65-125	16
Ethyl Benzene	ND	0.100	0.071/0.082	71/82	65-125	14
Xylenes	ND	0.300	0.220/0.250	73/83	65-125	13

>> Surrogate Recoveries (%) <<
 Trifluorotoluene (SS)

87/89 50-150



Superior

Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21922

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg)						
CJ011.37 05 / 06 - Sample Spiked: 21933 - 01						
Benzene	ND	0.100	0.075/0.073	75/73	65-125	3
Toluene	ND	0.100	0.080/0.079	80/79	65-125	1
Ethyl Benzene	ND	0.100	0.082/0.080	82/80	65-125	2
Xylenes	ND	0.300	0.252/0.240	84/80	65-125	5
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				86/89	50-150	

Definitions:

- ND = Not Detected
- RL = Reporting Limit
- NA = Not Analysed
- RPD = Relative Percent Difference
- ug/L = parts per billion (ppb)
- mg/L = parts per million (ppm)

- ug/kg = parts per billion (ppb)
- mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Chronology

Laboratory Number 21922

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-21 @ 16'	09/24/96	09/26/96	09/30/96	09/30/96	CI301.09	01
B-22 @ 15.5'	09/24/96	09/26/96	09/30/96	09/30/96	CI301.09	02
B-23 @ 10.5'	09/25/96	09/26/96	09/30/96	09/30/96	CI301.09	03
B-24 @ 16'	09/25/96	09/26/96	09/30/96	09/30/96	CI301.09	05

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CI301.09-01	Method Blank	MB	Soil	09/30/96	09/30/96
CI301.09-02	Laboratory Spike	LS	Soil	09/30/96	09/30/96
CI301.09-03	Laboratory Spike Duplicate	LSD	Soil	09/30/96	09/30/96
CI301.09-04	B-21 @ 16'	MS 21922-01	Soil	09/30/96	09/30/96
CI301.09-05	B-21 @ 16'	MSD 21922-01	Soil	09/30/96	09/30/96



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21922-01	B-21 @ 16'	Soil	1.0	-
21922-02	B-22 @ 15.5'	Soil	1.0	-
21922-03	B-23 @ 10.5'	Soil	1.0	-
21922-05	B-24 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	21922-01		21922-02		21922-03		21922-05	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/kg		ug/kg		ug/kg		ug/kg	
Chloromethane	ND	50	ND	50	ND	50	ND	50
Bromomethane	ND	50	ND	50	ND	50	ND	50
Vinyl Chloride	ND	50	ND	50	ND	50	ND	50
Chloroethane	ND	50	ND	50	ND	50	ND	50
Dichloromethane	ND	50	ND	50	ND	50	ND	50
Acetone	ND	200	ND	200	ND	200	ND	200
Carbon Disulfide	ND	15	ND	15	ND	15	ND	15
Trichlorofluoromethane	ND	15	ND	15	ND	15	ND	15
1,1-Dichloroethene	ND	15	ND	15	ND	15	ND	15
1,1-Dichloroethane	ND	15	ND	15	ND	15	ND	15
t-1,2-Dichloroethene	ND	15	ND	15	ND	15	ND	15
Chloroform	ND	15	ND	15	ND	15	ND	15
1,2-Dichloroethane	ND	5	ND	5	ND	5	ND	5
2-Butanone	ND	100	ND	100	ND	100	ND	100
1,1,1-Trichloroethane	ND	15	ND	15	ND	15	ND	15
Carbon tetrachloride	ND	15	ND	15	ND	15	ND	15
Vinyl Acetate	ND	50	ND	50	ND	50	ND	50
Bromodichloromethane	ND	15	ND	15	ND	15	ND	15
1,2-Dichloropropane	ND	15	ND	15	ND	15	ND	15
c-1,2-Dichloroethene	ND	15	ND	15	ND	15	ND	15
c-1,3-Dichloropropene	ND	15	ND	15	ND	15	ND	15
Trichloroethene	ND	15	ND	15	ND	15	ND	15
Dibromochloromethane	ND	15	ND	15	ND	15	ND	15
1,1,2-Trichloroethane	ND	15	ND	15	ND	15	ND	15
Benzene	ND	5	ND	5	ND	5	ND	5
t-1,3-Dichloropropene	ND	15	ND	15	ND	15	ND	15
Bromoform	ND	15	ND	15	ND	15	ND	15
4-methyl-2-Pentanone	ND	50	ND	50	ND	50	ND	50
2-Hexanone	ND	50	ND	50	ND	50	ND	50
Tetrachloroethene	ND	15	ND	15	ND	15	ND	15
1,1,2,2-Tetrachloroethane	ND	15	ND	15	ND	15	ND	15



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21922-01	B-21 @ 16'	Soil	1.0	-
21922-02	B-22 @ 15.5'	Soil	1.0	-
21922-03	B-23 @ 10.5'	Soil	1.0	-
21922-05	B-24 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	21922-01		21922-02		21922-03		21922-05	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/kg		ug/kg		ug/kg		ug/kg	
Toluene	ND	15	ND	15	ND	15	ND	15
Chlorobenzene	ND	15	ND	15	ND	15	ND	15
Ethyl Benzene	ND	15	ND	15	ND	15	ND	15
Styrene	ND	15	ND	15	ND	15	ND	15
Xylenes	ND	15	ND	15	ND	15	ND	15
1,3-Dichlorobenzene	ND	15	ND	15	ND	15	ND	15
1,4-Dichlorobenzene	ND	15	ND	15	ND	15	ND	15
1,2-Dichlorobenzene	ND	15	ND	15	ND	15	ND	15
>> Surrogate Recoveries (%) <<								
1,2-Dichloroethane-d4	95		97		94		99	
Toluene-d8	97		98		99		97	
Bromofluorobenzene	95		96		97		98	



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21922

Method Blank(s)

CI301.09-01

Conc. RL

ug/kg

Chloromethane	ND	50
Bromomethane	ND	50
Vinyl Chloride	ND	50
Chloroethane	ND	50
Dichloromethane	ND	50
Acetone	ND	200
Carbon Disulfide	ND	15
Trichlorofluoromethane	ND	15
1,1-Dichloroethene	ND	15
1,1-Dichloroethane	ND	15
t-1,2-Dichloroethene	ND	15
Chloroform	ND	15
1,2-Dichloroethane	ND	5
2-Butanone	ND	100
1,1,1-Trichloroethane	ND	15
Carbon tetrachloride	ND	15
Vinyl Acetate	ND	50
Bromodichloromethane	ND	15
1,2-Dichloropropane	ND	15
c-1,2-Dichloroethene	ND	15
c-1,3-Dichloropropene	ND	15
Trichloroethene	ND	15
Dibromochloromethane	ND	15
1,1,2-Trichloroethane	ND	15
Benzene	ND	5
t-1,3-Dichloropropene	ND	15
Bromoform	ND	15
4-methyl-2-Pentanone	ND	50
2-Hexanone	ND	50
Tetrachloroethene	ND	15
1,1,2,2-Tetrachloroethane	ND	15
Toluene	ND	15
Chlorobenzene	ND	15
Ethyl Benzene	ND	15
Styrene	ND	15
Xylenes	ND	15
1,3-Dichlorobenzene	ND	15



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21922

Method Blank(s)

CI301.09-01

Conc. RL

ug/kg

1,4-Dichlorobenzene	ND	15
1,2-Dichlorobenzene	ND	15

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	94
Toluene-d8	96
Bromofluorobenzene	99



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21922

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Soil Matrix (ug/kg)
 CI301.09 02 / 03 - Laboratory Control Spikes

1,1-Dichloroethene		200	170/180	85/90	59-172	6
Trichloroethene		200	200/190	100/95	62-137	5
Benzene		200	190/200	95/100	66-142	5
Toluene		200	180/200	90/100	59-139	11
Chlorobenzene		200	210/220	105/110	60-133	5

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4				90/97	88-117	
Toluene-d8				95/97	75-136	
Bromofluorobenzene				100/98	52-129	

For Soil Matrix (ug/kg)
 CI301.09 04 / 05 - Sample Spiked: 21922 - 01

1,1-Dichloroethene	ND	200	180/200	90/100	59-172	11
Trichloroethene	ND	200	180/210	90/105	62-137	15
Benzene	ND	200	190/220	95/110	66-142	15
Toluene	ND	200	190/220	95/110	59-139	15
Chlorobenzene	ND	200	200/230	100/115	60-133	14

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4				92/90	88-117	
Toluene-d8				95/100	75-136	
Bromofluorobenzene				96/96	52-129	

Definitions:

ND = Not Detected
 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
 mg/kg = parts per million (ppm)



Superior

RECEIVED

OCT 19 1996

BY: _____

Analytical Laboratory

Sierra Environmental - Martinez
P.O. Box 2546
Martinez, CA 94553

Date: October 6, 1996

Attn: JIM GREEN

Laboratory Number : 21927

Project Number/Name : 4-719-12

Facility/Site : TELAGRAPH BUSINESS PK
OAKLAND

Dear JIM GREEN:

Attached is Superior Analytical Laboratory report for the samples received on September 26, 1996. This report has been reviewed and approved for release. Following the cover letter is the Case Narrative detailing sample receipt and analysis. Also enclosed is a copy of the original Chain-of-Custody record confirming receipt of samples.

Please note that any unused portion of the sample will be discarded after October 26, 1996, unless you have requested otherwise.

We appreciate the opportunity to be of service to you. If you have any questions, please contact our Laboratory at (510) 313-0850.

Sincerely,

Afsaneh Salimpour
Project Manager



Superior

Analytical Laboratory

CASE NARRATIVE

Sierra Environmental - Martinez
Project Number/Name: 4-719-12
Laboratory Number: 21927

Sample Receipt

One soil sample was received by
Superior Analytical Laboratory on September 26, 1996.

Cooler temperature was 4°C

No abnormalities were noted with sample receiving.

Sample Analysis

The sample was analysed for methods 8015M, 8020 and 8240.

I / I



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 2, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Chronology

Laboratory Number 21927

Sample ID

Sampled Received Extract. Analyzed QC Batch LAB #

B-25 @ 16' 09/25/96 09/26/96 09/30/96 09/30/96 CI301.37 01

QC Samples

QC Batch # QC Sample ID TypeRef. Matrix Extract. Analyzed

CI301.37-02	Laboratory Spike	LS	Soil	09/30/96	09/30/96
CI301.37-04	UPG-3-3	MS 21925-03	Soil	09/30/96	09/30/96
CI301.37-05	UPG-3-3	MSD 21925-03	Soil	09/30/96	09/30/96
CI301.37-01	Method Blank	MB	Soil	09/30/96	09/30/96



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 2, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21927-01	B-25 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	21927-01 Conc. RL mg/kg
Benzene	ND 0.005
Toluene	ND 0.005
Ethyl Benzene	ND 0.005
Xylenes	ND 0.005

>> Surrogate Recoveries (%) <<
Trifluorotoluene (SS) 85



Superior

Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21927

Method Blank(s)

CI301.37-01

Conc. RL

mg/kg

Benzene	ND	0.005
Toluene	ND	0.005
Ethyl Benzene	ND	0.005
Xylenes	ND	0.005

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS) 72



Superior

Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21927

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg)						
CI301.37 02 / - Laboratory Control Spikes						
Benzene		0.100	0.071	71	65-125	
Toluene		0.100	0.073	73	65-125	
Ethyl Benzene		0.100	0.075	75	65-125	
Xylenes		0.300	0.230	77	65-125	
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				81	50-150	

For Soil Matrix (mg/kg)						
CI301.37 04 / 05 - Sample Spiked: 21925 - 03						
Benzene	ND	0.100	0.068/0.074	68/74	65-125	8
Toluene	ND	0.100	0.074/0.079	74/79	65-125	7
Ethyl Benzene	ND	0.100	0.074/0.078	74/78	65-125	5
Xylenes	ND	0.300	0.230/0.240	77/80	65-125	4
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				89/86	50-150	

Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Chronology

Laboratory Number 21927

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-25 @ 16'	09/25/96	09/26/96	09/27/96	09/28/96	CI271.21	01

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CI271.21-01	Method Blank	MB	Soil	09/27/96	09/27/96
CI271.21-02	Laboratory Spike	LS	Soil	09/27/96	09/30/96
CI271.21-03	Laboratory Spike Duplicate	LSD	Soil	09/27/96	09/30/96
CI271.21-04	UPG-3-3	MS 21925-03	Soil	09/27/96	09/28/96
CI271.21-05	UPG-3-3	MSD 21925-03	Soil	09/27/96	09/28/96



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
21927-01	B-25 @ 16'	Soil	1.0	-

R E S U L T S O F A N A L Y S I S

Compound 21927-01
Conc. RL
mg/kg

Stoddard ND 10

>> Surrogate Recoveries (%) <<
Tetracosane 94



Superior

Analytical Laboratory

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 21927

Method Blank(s)

CI271.21-01

Conc. RL

mg/Kg

Stoddard	ND	10
Diesel:	ND	1

>> Surrogate Recoveries (%) <<

Tetracosane	107
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Superior

Analytical Laboratory

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 21927

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Soil Matrix (mg/Kg)
CI271.21 02 / 03 - Laboratory Control Spikes

Diesel:		33.3	41.5/32.3	125/97	50-150	25
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>> Surrogate Recoveries (%) <<

Tetracosane				99/91	50-150	
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For Soil Matrix (mg/Kg)
CI271.21 04 / 05 - Sample Spiked: 21925 - 03

Diesel:	2	33	37/38	106/109	50-150	3
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>> Surrogate Recoveries (%) <<

Tetracosane				99/105	50-150	
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Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Chronology

Laboratory Number 21927

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-25 @ 16'	09/25/96	09/26/96	09/30/96	09/30/96	CI301.09	01

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CI301.09-01	Method Blank	MB	Soil	09/30/96	09/30/96
CI301.09-02	Laboratory Spike	LS	Soil	09/30/96	09/30/96
CI301.09-03	Laboratory Spike Duplicate	LSD	Soil	09/30/96	09/30/96
CI301.09-04	B-21 @ 16'	MS 21922-01	Soil	09/30/96	09/30/96
CI301.09-05	B-21 @ 16'	MSD 21922-01	Soil	09/30/96	09/30/96



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
21927-01	B-25 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	21927-01 Conc. RL ug/kg
Chloromethane	ND 50
Bromomethane	ND 50
Vinyl Chloride	ND 50
Chloroethane	ND 50
Dichloromethane	ND 50
Acetone	ND 200
Carbon Disulfide	ND 15
Trichlorofluoromethane	ND 15
1,1-Dichloroethene	ND 15
1,1-Dichloroethane	ND 15
t-1,2-Dichloroethene	ND 15
Chloroform	ND 15
1,2-Dichloroethane	ND 5
2-Butanone	ND 100
1,1,1-Trichloroethane	ND 15
Carbon tetrachloride	ND 15
Vinyl Acetate	ND 50
Bromodichloromethane	ND 15
1,2-Dichloropropane	ND 15
c-1,2-Dichloroethene	ND 15
c-1,3-Dichloropropene	ND 15
Trichloroethene	ND 15
Dibromochloromethane	ND 15
1,1,2-Trichloroethane	ND 15
Benzene	5.2 5
t-1,3-Dichloropropene	ND 15
Bromoform	ND 15
4-methyl-2-Pentanone	ND 50
2-Hexanone	ND 50
Tetrachloroethene	ND 15
1,1,2,2-Tetrachloroethane	ND 15



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Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 1, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21927-01	B-25 @ 16'	Soil	1.0	-

RESULTS OF ANALYSIS

Compound 21927-01
 Conc. RL
 ug/kg

Toluene	ND	15
Chlorobenzene	ND	15
Ethyl Benzene	ND	15
Styrene	ND	15
Xylenes	ND	15
1,3-Dichlorobenzene	ND	15
1,4-Dichlorobenzene	ND	15
1,2-Dichlorobenzene	ND	15

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	93
Toluene-d8	95
Bromofluorobenzene	97



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21927

Method Blank(s)

CI301.09-01

Conc. RL

ug/kg

Chloromethane	ND	50
Bromomethane	ND	50
Vinyl Chloride	ND	50
Chloroethane	ND	50
Dichloromethane	ND	50
Acetone	ND	200
Carbon Disulfide	ND	15
Trichlorofluoromethane	ND	15
1,1-Dichloroethene	ND	15
1,1-Dichloroethane	ND	15
t-1,2-Dichloroethene	ND	15
Chloroform	ND	15
1,2-Dichloroethane	ND	5
2-Butanone	ND	100
1,1,1-Trichloroethane	ND	15
Carbon tetrachloride	ND	15
Vinyl Acetate	ND	50
Bromodichloromethane	ND	15
1,2-Dichloropropane	ND	15
c-1,2-Dichloroethene	ND	15
c-1,3-Dichloropropene	ND	15
Trichloroethene	ND	15
Dibromochloromethane	ND	15
1,1,2-Trichloroethane	ND	15
Benzene	ND	5
t-1,3-Dichloropropene	ND	15
Bromoform	ND	15
4-methyl-2-Pentanone	ND	50
2-Hexanone	ND	50
Tetrachloroethene	ND	15
1,1,2,2-Tetrachloroethane	ND	15
Toluene	ND	15
Chlorobenzene	ND	15
Ethyl Benzene	ND	15
Styrene	ND	15
Xylenes	ND	15
1,3-Dichlorobenzene	ND	15



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21927

Method Blank(s)

CI301.09-01

Conc. RL

ug/kg

1,4-Dichlorobenzene	ND	15
1,2-Dichlorobenzene	ND	15

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	94
Toluene-d8	96
Bromofluorobenzene	99



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21927

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Soil Matrix (ug/kg)
 CI301.09 02 / 03 - Laboratory Control Spikes

1,1-Dichloroethene	200	170/180	85/90	59-172	6
Trichloroethene	200	200/190	100/95	62-137	5
Benzene	200	190/200	95/100	66-142	5
Toluene	200	180/200	90/100	59-139	11
Chlorobenzene	200	210/220	105/110	60-133	5

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	90/97	88-117
Toluene-d8	95/97	75-136
Bromofluorobenzene	100/98	52-129

For Soil Matrix (ug/kg)
 CI301.09 04 / 05 - Sample Spiked: 21922 - 01

1,1-Dichloroethene	ND	200	180/200	90/100	59-172	11
Trichloroethene	ND	200	180/210	90/105	62-137	15
Benzene	ND	200	190/220	95/110	66-142	15
Toluene	ND	200	190/220	95/110	59-139	15
Chlorobenzene	ND	200	200/230	100/115	60-133	14

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	92/90	88-117
Toluene-d8	95/100	75-136
Bromofluorobenzene	96/96	52-129

Definitions:

ND = Not Detected
 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
 mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
P.O. Box 2546
Martinez, CA 94553

Date: October 3, 1996

Attn: JIM GREEN

Laboratory Number : 21918

Project Number/Name : 4-719-12

Facility/Site : TELEGRAPH BUSNISS PK
5427 TELEGRAPH AVE
OAKLAND

Dear JIM GREEN:

Attached is Superior Analytical Laboratory report for the samples received on September 25, 1996. This report has been reviewed and approved for release. Following the cover letter is the Case Narrative detailing sample receipt and analysis. Also enclosed is a copy of the original Chain-of-Custody record confirming receipt of samples.

Please note that any unused portion of the sample will be discarded after October 25, 1996, unless you have requested otherwise.

We appreciate the opportunity to be of service to you. If you have any questions, please contact our Laboratory at (510) 313-0850.

Sincerely,

A handwritten signature in black ink, appearing to read 'Afsaneh Salimpour', is written over a horizontal line. The signature is fluid and cursive.

Afsaneh Salimpour
Project Manager



Superior

Analytical Laboratory

CASE NARRATIVE

Sierra Environmental - Martinez
Project Number/Name: 4-719-12
Laboratory Number: 21918

Sample Receipt

Seven water samples were received by
Superior Analytical Laboratory on September 25, 1996.

Cooler temperature was 4°C

No abnormalities were noted with sample receiving.

Sample Analysis

The samples were analysed for methods , 8015M, 8020 and 8240.

TPH/8015

- Accurate quantitation of the surrogate was not possible due to the extent of sample dilution for B-23.

I / I



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Chronology

Laboratory Number 21918

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-18	09/24/96	09/25/96	09/27/96	09/27/96	CI271.09	01
B-19	09/24/96	09/25/96	09/27/96	09/27/96	CI271.09	02
B-20	09/24/96	09/25/96	09/27/96	09/27/96	CI271.09	03
B-23	09/25/96	09/25/96	09/27/96	09/27/96	CI271.09	04
B-26	09/25/96	09/25/96	09/27/96	09/27/96	CI271.09	05
B-27	09/25/96	09/25/96	09/27/96	09/27/96	CI271.09	06

QC Samples

QC Batch #	QC Sample ID	Type	Ref.	Matrix	Extract.	Analyzed
CI271.09-01	Method Blank	MB		Water	09/27/96	09/27/96
CI271.09-02	Laboratory Spike	LS		Water	09/27/96	09/27/96
CI271.09-03	Laboratory Spike Duplicate	LSD		Water	09/27/96	09/27/96
CI271.09-04	B-19	MS	21918-02	Water	09/27/96	09/27/96
CI271.09-05	B-19	MSD	21918-02	Water	09/27/96	09/27/96



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
21918-01	B-18	Water	1.0	-
21918-02	B-19	Water	1.0	-
21918-03	B-20	Water	1.0	-
21918-04	B-23	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-01		21918-02		21918-03		21918-04	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L		ug/L	
Chloromethane	ND	10	ND	10	ND	10	ND	10
Bromomethane	ND	10	ND	10	ND	10	ND	10
Vinyl Chloride	ND	10	ND	10	ND	10	ND	10
Chloroethane	ND	10	ND	10	ND	10	ND	10
Dichloromethane	ND	10	ND	10	ND	10	ND	10
Acetone	ND	40	ND	40	ND	40	ND	40
Carbon Disulfide	ND	3	ND	3	ND	3	ND	3
Trichlorofluoromethane	ND	3	ND	3	ND	3	ND	3
1,1-Dichloroethene	ND	3	ND	3	ND	3	ND	3
1,1-Dichloroethane	ND	3	ND	3	ND	3	ND	3
t-1,2-Dichloroethene	ND	3	ND	3	ND	3	ND	3
Chloroform	ND	3	ND	3	ND	3	ND	3
1,2-Dichloroethane	ND	1	ND	1	ND	1	ND	1
2-Butanone	ND	20	ND	20	ND	20	ND	20
1,1,1-Trichloroethane	ND	3	ND	3	ND	3	ND	3
Carbon tetrachloride	ND	3	ND	3	ND	3	ND	3
Vinyl Acetate	ND	10	ND	10	ND	10	ND	10
Bromodichloromethane	ND	3	ND	3	ND	3	ND	3
1,2-Dichloropropane	ND	3	ND	3	ND	3	ND	3
c-1,2-Dichloroethene	16	3	ND	3	ND	3	ND	3
c-1,3-Dichloropropene	ND	3	ND	3	ND	3	ND	3
Trichloroethene	10	3	ND	3	ND	3	ND	3
Dibromochloromethane	ND	3	ND	3	ND	3	ND	3
1,1,2-Trichloroethane	ND	3	ND	3	ND	3	ND	3
Benzene	ND	1	ND	1	ND	1	ND	1
t-1,3-Dichloropropene	ND	3	ND	3	ND	3	ND	3
Bromoform	ND	3	ND	3	ND	3	ND	3
4-methyl-2-Pentanone	ND	10	ND	10	ND	10	ND	10
2-Hexanone	ND	10	ND	10	ND	10	ND	10
Tetrachloroethene	24	3	ND	3	8.4	3	ND	3



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
21918-01	B-18	Water	1.0	-
21918-02	B-19	Water	1.0	-
21918-03	B-20	Water	1.0	-
21918-04	B-23	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-01		21918-02		21918-03		21918-04	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L		ug/L	
1,1,2,2-Tetrachloroethane	ND	3	ND	3	ND	3	ND	3
Toluene	ND	3	ND	3	ND	3	ND	3
Chlorobenzene	ND	3	ND	3	ND	3	ND	3
Ethyl Benzene	ND	3	ND	3	ND	3	ND	3
Styrene	ND	3	ND	3	ND	3	ND	3
Xylenes	ND	3	ND	3	ND	3	ND	3
1,3-Dichlorobenzene	ND	3	ND	3	ND	3	ND	3
1,4-Dichlorobenzene	ND	3	ND	3	ND	3	ND	3
1,2-Dichlorobenzene	ND	3	ND	3	ND	3	ND	3

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	97	94	96	96
Toluene-d8	95	94	96	94
Bromofluorobenzene	100	97	100	107



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21918-05	B-26	Water	1.0	-
21918-06	B-27	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-05		21918-06	
	Conc.	RL	Conc.	RL
	ug/L		ug/L	
Chloromethane	ND	10	ND	10
Bromomethane	ND	10	ND	10
Vinyl Chloride	ND	10	ND	10
Chloroethane	ND	10	ND	10
Dichloromethane	ND	10	ND	10
Acetone	ND	40	ND	40
Carbon Disulfide	ND	3	ND	3
Trichlorofluoromethane	ND	3	ND	3
1,1-Dichloroethene	ND	3	ND	3
1,1-Dichloroethane	ND	3	ND	3
t-1,2-Dichloroethene	ND	3	ND	3
Chloroform	ND	3	ND	3
1,2-Dichloroethane	ND	1	ND	1
2-Butanone	ND	20	ND	20
1,1,1-Trichloroethane	ND	3	ND	3
Carbon tetrachloride	ND	3	ND	3
Vinyl Acetate	ND	10	ND	10
Bromodichloromethane	ND	3	ND	3
1,2-Dichloropropane	ND	3	ND	3
c-1,2-Dichloroethene	ND	3	ND	3
c-1,3-Dichloropropene	ND	3	ND	3
Trichloroethene	ND	3	ND	3
Dibromochloromethane	ND	3	ND	3
1,1,2-Trichloroethane	ND	3	ND	3
Benzene	ND	1	ND	1
t-1,3-Dichloropropene	ND	3	ND	3
Bromoform	ND	3	ND	3
4-methyl-2-Pentanone	ND	10	ND	10
2-Hexanone	ND	10	ND	10
Tetrachloroethene	ND	3	ND	3



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Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
21918-05	B-26	Water	1.0	-
21918-06	B-27	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-05		21918-06	
	Conc.	RL	Conc.	RL
	ug/L		ug/L	
1,1,2,2-Tetrachloroethane	ND	3	ND	3
Toluene	ND	3	ND	3
Chlorobenzene	ND	3	ND	3
Ethyl Benzene	ND	3	ND	3
Styrene	ND	3	ND	3
Xylenes	ND	3	ND	3
1,3-Dichlorobenzene	ND	3	ND	3
1,4-Dichlorobenzene	ND	3	ND	3
1,2-Dichlorobenzene	ND	3	ND	3

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	101	96
Toluene-d8	96	97
Bromofluorobenzene	103	98



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Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21918

Method Blank(s)

CI271.09-01

Conc. RL

ug/L

Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
Dichloromethane	ND	10
Acetone	ND	40
Carbon Disulfide	ND	3
Trichlorofluoromethane	ND	3
1,1-Dichloroethene	ND	3
1,1-Dichloroethane	ND	3
t-1,2-Dichloroethene	ND	3
Chloroform	ND	3
1,2-Dichloroethane	ND	1
2-Butanone	ND	20
1,1,1-Trichloroethane	ND	3
Carbon tetrachloride	ND	3
Vinyl Acetate	ND	10
Bromodichloromethane	ND	3
1,2-Dichloropropane	ND	3
c-1,2-Dichloroethene	ND	3
c-1,3-Dichloropropene	ND	3
Trichloroethene	ND	3
Dibromochloromethane	ND	3
1,1,2-Trichloroethane	ND	3
Benzene	ND	1
t-1,3-Dichloropropene	ND	3
Bromoform	ND	3
4-methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Tetrachloroethene	ND	3
1,1,2,2-Tetrachloroethane	ND	3
Toluene	ND	3
Chlorobenzene	ND	3
Ethyl Benzene	ND	3
Styrene	ND	3
Xylenes	ND	3
1,3-Dichlorobenzene	ND	3



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Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21918

Method Blank(s)

CI271.09-01

Conc. RL

ug/L

1,4-Dichlorobenzene	ND	3
1,2-Dichlorobenzene	ND	3

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	88
Toluene-d8	99
Bromofluorobenzene	95



Superior

Analytical Laboratory

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 21918

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Water Matrix (ug/L)
 CI271.09 02 / 03 - Laboratory Control Spikes

1,1-Dichloroethene	40	34/37	85/93	61-145	9
Trichloroethene	40	36/38	90/95	71-120	5
Benzene	40	37/40	93/100	76-127	7
Toluene	40	38/38	95/95	76-125	0
Chlorobenzene	40	40/42	100/105	75-130	5

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	94/94	84-128
Toluene-d8	100/96	84-118
Bromofluorobenzene	100/99	48-123

For Water Matrix (ug/L)
 CI271.09 04 / 05 - Sample Spiked: 21918 - 02

1,1-Dichloroethene	ND	40	42/32	105/80	61-145	27
Trichloroethene	ND	40	53/44	133/110	71-120	19
Benzene	ND	40	46/37	115/93	76-127	21
Toluene	ND	40	44/36	110/90	76-125	20
Chlorobenzene	ND	40	49/40	123/100	75-130	21

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	94/94	84-128
Toluene-d8	95/95	84-118
Bromofluorobenzene	96/100	48-123

Definitions:

ND = Not Detected
 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
 mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Chronology

Laboratory Number 21918

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-18	09/24/96	09/25/96	09/30/96	09/30/96	CI301.21	01
B-19	09/24/96	09/25/96	09/30/96	09/30/96	CI301.21	02
B-20	09/24/96	09/25/96	09/30/96	09/30/96	CI301.21	03
B-23	09/25/96	09/25/96	09/30/96	10/01/96	CI301.21	04
B-26	09/25/96	09/25/96	09/30/96	09/30/96	CI301.21	05
B-27	09/25/96	09/25/96	09/30/96	10/01/96	CI301.21	06

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CI301.21-01	Method Blank	MB	Water	09/30/96	09/30/96
CI301.21-02	Laboratory Spike	LS	Water	09/30/96	09/30/96
CI301.21-03	Laboratory Spike Duplicate	LSD	Water	09/30/96	09/30/96



Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21918-01	B-18	Water	1.0	-
21918-02	B-19	Water	1.0	-
21918-03	B-20	Water	1.0	-
21918-04	B-23	Water	5.0	-

RESULTS OF ANALYSIS

Compound	21918-01		21918-02		21918-03		21918-04		
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL	
	ug/L		ug/L		ug/L		ug/L		
Stoddard	ND	50	ND	50	ND	50	4600	250	
Diesel:	NA	50	NA	50	NA	50	NA	250	
Unknown Hydrocarbons	NA		50**	50	NA		NA		
>> Surrogate Recoveries (%) <<									
Tetracosane	96		63		90		220H		



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21918-05	B-26	Water	1.0	-
21918-06	B-27	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-05		21918-06	
	Conc.	RL	Conc.	RL
	ug/L		ug/L	
Stoddard	ND	50	ND	50
Diesel:	NA	50	NA	50
Unknown Hydrocarbons	NA		NA	
>> Surrogate Recoveries (%) <<				
Tetracosane	57		85	



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Analytical Laboratory

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 21918
Method Blank(s)

CI301.21-01
Conc. RL
ug/L

Stoddard	ND	50
Diesel:	ND	50
Unknown Hydrocarbons	ND	50

>> Surrogate Recoveries (%) <<

Tetracosane	99
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Analytical Laboratory

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 21918

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
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For Water Matrix (ug/L)
CI301.21 02 / 03 - Laboratory Control Spikes

Diesel:		1000	1200/1200	120/120	50-150	0
>> Surrogate Recoveries (%) <<						
Tetracosane				100/98	50-150	

Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



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Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Chronology

Laboratory Number 21918

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
B-18	09/24/96	09/25/96	09/27/96	09/27/96	CI271.05	01
B-19	09/24/96	09/25/96	09/27/96	09/27/96	CI271.05	02
B-20	09/24/96	09/25/96	09/27/96	09/27/96	CI271.05	03
B-23	09/25/96	09/25/96	09/27/96	09/27/96	CI271.05	04
B-26	09/25/96	09/25/96	09/27/96	09/27/96	CI271.05	05
B-27	09/25/96	09/25/96	09/30/96	09/30/96	CI301.05	06
TB	09/24/96	09/25/96	09/27/96	09/27/96	CI271.05	07

QC Samples

QC Batch #	QC Sample ID	Type	Ref.	Matrix	Extract.	Analyzed
CI271.05-05	Laboratory Spike	LS		Water	09/27/96	09/27/96
CI271.05-16	B-19	MS	21918-02	Water	09/27/96	09/27/96
CI271.05-17	B-19	MSD	21918-02	Water	09/27/96	09/27/96
CI301.05-04	Laboratory Spike	LS		Water	09/30/96	09/30/96
CI301.05-07	B-27	MS	21918-06	Water	09/30/96	09/30/96
CI301.05-08	B-27	MSD	21918-06	Water	09/30/96	09/30/96
CI301.05-03	Method Blank	MB		Water	09/30/96	09/30/96
CI271.05-04	Method Blank	MB		Water	09/27/96	09/27/96



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Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
21918-01	B-18	Water	1.0	-
21918-02	B-19	Water	1.0	-
21918-03	B-20	Water	1.0	-
21918-04	B-23	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-01		21918-02		21918-03		21918-04	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L		ug/L	
Benzene	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Toluene	0.5	0.5	0.7	0.5	ND	0.5	0.7	0.5
Ethyl Benzene	ND	0.5	ND	0.5	ND	0.5	100	0.5
Xylenes	ND	0.5	0.7	0.5	ND	0.5	540	0.5
>> Surrogate Recoveries (%) <<								
Trifluorotoluene (SS)	78		76		74		75	



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Analytical Laboratory

Sierra Environmental - Martinez
Attn: JIM GREEN

Project 4-719-12
Reported on October 3, 1996
Revised on December 3, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
21918-05	B-26	Water	1.0	-
21918-06	B-27	Water	1.0	-
21918-07	TB	Water	1.0	-

RESULTS OF ANALYSIS

Compound	21918-05		21918-06		21918-07	
	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L	
Benzene	ND	0.5	ND	0.5	ND	0.5
Toluene	ND	0.5	0.5	0.5	ND	0.5
Ethyl Benzene	ND	0.5	ND	0.5	ND	0.5
Xylenes	ND	0.5	ND	0.5	ND	0.5

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)	69	78	65
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Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21918

Method Blank(s)

CI301.05-03	CI271.05-04
Conc. RL	Conc. RL
ug/L	ug/L

Benzene	ND	0.5	ND	0.5
Toluene	ND	0.5	ND	0.5
Ethyl Benzene	ND	0.5	ND	0.5
Xylenes	ND	0.5	ND	0.5

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)	83	83
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Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21918

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Water Matrix (ug/L)
 CI271.05 05 / - Laboratory Control Spikes

Benzene		20	17	85	65-125	
Toluene		20	19	95	65-125	
Ethyl Benzene		20	18	90	65-125	
Xylenes		60	60	100	65-125	

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)				80	50-150	
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For Water Matrix (ug/L)
 CI301.05 04 / - Laboratory Control Spikes

Benzene		20	18	90	65-125	
Toluene		20	18	90	65-125	
Ethyl Benzene		20	19	95	65-125	
Xylenes		60	60	100	65-125	

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)				82	50-150	
-----------------------	--	--	--	----	--------	--

For Water Matrix (ug/L)
 CI271.05 16 / 17 - Sample Spiked: 21918 - 02

Benzene	ND	20	17/17	85/85	65-125	0
Toluene	0.7	20	16/17	77/82	65-125	6
Ethyl Benzene	ND	20	15/17	75/85	65-125	13
Xylenes	0.7	60	51/58	84/96	65-125	13

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)				71/72	50-150	
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Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 21918

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Water Matrix (ug/L)
 CI301.05 07 / 08 - Sample Spiked: 21918 - 06

Benzene	ND	20	18/18	90/90	65-125	0
Toluene	0.5	20	18/19	88/93	65-125	6
Ethyl Benzene	ND	20	19/19	95/95	65-125	0
Xylenes	ND	60	58/57	97/95	65-125	2

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)				80/85	50-150	
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Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

Sierra Environmental - Martinez
P.O. Box 2546
Martinez, CA 94553

Date: November 10, 1996

Attn: MARIO STERNAO

Laboratory Number : 22038

Project Number/Name : 4-719-12
Facility/Site : 5427 Telegraph ave
Oakland

Dear MARIO STERNAO:

Attached is Superior Analytical Laboratory report for the samples received on November 1, 1996. This report has been reviewed and approved for release. Following the cover letter is the Case Narrative detailing sample receipt and analysis. Also enclosed is a copy of the original Chain-of-Custody record confirming receipt of samples.

Please note that any unused portion of the sample will be discarded after December 1, 1996, unless you have requested otherwise.

We appreciate the opportunity to be of service to you. If you have any questions, please contact our Laboratory at (510) 313-0850.

Sincerely,

Afsaneh Salimpour
Project Manager

Customer Service: (800) 521-6109 . Laboratory: (510) 313-0850 . Facsimile: (510) 229-0916
Post Office Box 2648 . 835 Arnold Drive . Suite #106 . Martinez, California 94553
1555 Burke Street . Suite A . San Francisco, California 94124



Superior

Analytical Laboratory

CASE NARRATIVE

Sierra Environmental - Martinez
Project Number/Name: 4-719-12
Laboratory Number: 22038

Sample Receipt

Four water samples were received by
Superior Analytical Laboratory on November 1, 1996.

Cooler temperature was 4°C

No abnormalities were noted with sample receiving.

Sample Analysis

The samples were analysed for methods , 8015M, 8020, 8240 and
HOLD.

I / I

Customer Service: (800) 521-6109 . Laboratory: (510) 313-0850 . Facsimile: (510) 229-0916
Post Office Box 2648 . 835 Arnold Drive . Suite #106 . Martinez, California 94553
1555 Burke Street . Suite A . San Francisco, California 94124



Superior

Analytical Laboratory

Sierra Environmental - Martinez
Attn: MARIO STERNAO

Project 4-719-12
Reported on November 11, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Chronology

Laboratory Number 22038

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
W-B28	10/31/96	11/01/96	11/04/96	11/04/96	CK042.37	01
W-B29	10/31/96	11/01/96	11/04/96	11/04/96	CK042.37	02
W-B30	10/31/96	11/01/96	11/04/96	11/04/96	CK042.37	03

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CK042.37-01	Method Blank	MB	Water	11/04/96	11/04/96
CK042.37-02	Laboratory Spike	LS	Water	11/04/96	11/04/96
CK042.37-03	Laboratory Spike Duplicate	LSD	Water	11/04/96	11/04/96
CK042.37-04	POND	MS 22037-01	Water	11/04/96	11/04/96
CK042.37-05	POND	MSD 22037-01	Water	11/04/96	11/04/96



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Analytical Laboratory

Sierra Environmental - Martinez
Attn: MARIO STERNAO

Project 4-719-12
Reported on November 11, 1996

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Table with 5 columns: LAB ID, Sample ID, Matrix, Dil. Factor, Moisture. Rows include samples 22038-01, 22038-02, and 22038-03.

RESULTS OF ANALYSIS

Table with 7 columns: Compound, 22038-01 Conc. RL ug/L, 22038-02 Conc. RL ug/L, 22038-03 Conc. RL ug/L. Rows include Benzene, Toluene, Ethyl Benzene, and Xylenes.

>> Surrogate Recoveries (%) <<

Table with 4 columns: Surrogate, 22038-01, 22038-02, 22038-03. Row: Trifluorotoluene (SS) with values 95, 100, 89.



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Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 22038

Method Blank(s)

CK042.37-01

Conc. RL

ug/L

Benzene	ND	0.5
Toluene	ND	0.5
Ethyl Benzene	ND	0.5
Xylenes	ND	0.5

>> Surrogate Recoveries (%) <<
Trifluorotoluene (SS) 98



Superior

Analytical Laboratory

Volatile Aromatic Hydrocarbons by EPA SW-846 Method 5030/8020

Quality Assurance and Control Data

Laboratory Number: 22038

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Water Matrix (ug/L)						
CK042.37 02 / 03 - Laboratory Control Spikes						
Benzene		20	17/18	85/90	65-135	6
Toluene		20	18/18	90/90	65-135	0
Ethyl Benzene		20	18/18	90/90	65-135	0
Xylenes		60	56/56	93/93	65-135	0

>> Surrogate Recoveries (%) <<
Trifluorotoluene (SS)

100/104 50-150

For Water Matrix (ug/L)
CK042.37 04 / 05 - Sample Spiked: 22037 - 01

Benzene	ND	20	17/17	85/85	65-135	0
Toluene	ND	20	17/17	85/85	65-135	0
Ethyl Benzene	ND	20	18/17	90/85	65-135	6
Xylenes	.7	60	54/53	89/87	65-135	2

>> Surrogate Recoveries (%) <<
Trifluorotoluene (SS)

98/99 50-150

P - There is a greater than 25% difference for detected concentration between the two GC columns.

Definitions:

ND = Not Detected
 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
 mg/kg = parts per million (ppm)



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Sierra Environmental - Martinez
Attn: MARIO STERNAO

Project 4-719-12
Reported on November 13, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Chronology

Laboratory Number 22038

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
W-B28	10/31/96	11/01/96	11/05/96	11/05/96	CK051.21	01
W-B29	10/31/96	11/01/96	11/05/96	11/05/96	CK051.21	02
W-B30	10/31/96	11/01/96	11/05/96	11/05/96	CK051.21	03

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CK051.21-01	Method Blank	MB	Water	11/05/96	11/05/96
CK051.21-02	Laboratory Spike	LS	Water	11/05/96	11/05/96
CK051.21-03	Laboratory Spike Duplicate	LSD	Water	11/05/96	11/05/96



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Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Table with 5 columns: LAB ID, Sample ID, Matrix, Dil. Factor, Moisture. Rows include 22038-01, 22038-02, 22038-03.

RESULTS OF ANALYSIS

Table with 7 columns: Compound, 22038-01 Conc. RL, 22038-02 Conc. RL, 22038-03 Conc. RL. Rows include Stoddard, Diesel, Unknown Hydrocarbons.

>> Surrogate Recoveries (%) <<
Tetracosane 98 97 96



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Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 22038
Method Blank(s)

CK051.21-01
Conc. RL
ug/L

Stoddard	ND	50
Diesel:	ND	50
Unknown Hydrocarbons	ND	50

>> Surrogate Recoveries (%) <<
Tetracosane 103



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Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 22038

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Water Matrix (ug/L)						
CK051.21 02 / 03 - Laboratory Control Spikes						
Diesel:		1000	960/870	96/87	50-150	10
>> Surrogate Recoveries (%) <<						
Tetracosane				101/98	50-150	

** - Heavier hydrocarbons were found in the range of stoddard, but do not resemble a stoddard fingerprint. Possible weathered diesel or motor oil.

!!- Hydrocarbons were found in the range of stoddard, but do not resemble a stoddard fingerprint.

Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



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Sierra Environmental - Martinez
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Project 4-719-12
Reported on November 4, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

Chronology

Laboratory Number 22038

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
W-B28	10/31/96	11/01/96	11/04/96	11/04/96	CK041.09	01
W-B29	10/31/96	11/01/96	11/04/96	11/04/96	CK041.09	02
W-B30	10/31/96	11/01/96	11/04/96	11/04/96	CK041.09	03

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CK041.09-01	Method Blank	MB	Water	11/04/96	11/04/96
CK041.09-02	Laboratory Spike	LS	Water	11/04/96	11/04/96
CK041.09-03	W-B28	MS 22038-01	Water	11/04/96	11/04/96
CK041.09-04	W-B28	MSD 22038-01	Water	11/04/96	11/04/96



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Reported on November 4, 1996

EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
22038-01	W-B28	Water	1.0	-
22038-02	W-B29	Water	1.0	-
22038-03	W-B30	Water	1.0	-

RESULTS OF ANALYSIS

Compound	22038-01		22038-02		22038-03	
	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L	
Chloromethane	ND	10	ND	10	ND	10
Bromomethane	ND	10	ND	10	ND	10
Vinyl Chloride	ND	10	ND	10	ND	10
Chloroethane	ND	10	ND	10	ND	10
Dichloromethane	ND	10	ND	10	ND	10
Acetone	ND	40	ND	40	ND	40
Carbon Disulfide	ND	3	ND	3	ND	3
Trichlorofluoromethane	ND	3	ND	3	ND	3
1,1-Dichloroethene	ND	3	ND	3	ND	3
1,1-Dichloroethane	ND	3	ND	3	ND	3
t-1,2-Dichloroethene	ND	3	ND	3	ND	3
Chloroform	ND	3	ND	3	ND	3
1,2-Dichloroethane	ND	1	ND	1	ND	1
2-Butanone	ND	20	ND	20	ND	20
1,1,1-Trichloroethane	ND	3	ND	3	ND	3
Carbon tetrachloride	ND	3	ND	3	ND	3
Vinyl Acetate	ND	10	ND	10	ND	10
Bromodichloromethane	ND	3	ND	3	ND	3
1,2-Dichloropropane	ND	3	ND	3	ND	3
c-1,2-Dichloroethene	ND	3	ND	3	ND	3
c-1,3-Dichloropropene	ND	3	ND	3	ND	3
Trichloroethene	ND	3	ND	3	ND	3
Dibromochloromethane	ND	3	ND	3	ND	3
1,1,2-Trichloroethane	ND	3	ND	3	ND	3
Benzene	ND	1	ND	1	ND	1
t-1,3-Dichloropropene	ND	3	ND	3	ND	3
Bromoform	ND	3	ND	3	ND	3
4-methyl-2-Pentanone	ND	10	ND	10	ND	10
2-Hexanone	ND	10	ND	10	ND	10
Tetrachloroethene	ND	3	ND	3	ND	3
1,1,2,2-Tetrachloroethane	ND	3	ND	3	ND	3



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EPA SW-846 Method 8240 Volatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
22038-01	W-B28	Water	1.0	-
22038-02	W-B29	Water	1.0	-
22038-03	W-B30	Water	1.0	-

RESULTS OF ANALYSIS

Compound	22038-01		22038-02		22038-03	
	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L	
Toluene	ND	3	ND	3	ND	3
Chlorobenzene	ND	3	ND	3	ND	3
Ethyl Benzene	ND	3	ND	3	3.7	3
Styrene	ND	3	ND	3	ND	3
Xylenes	ND	3	ND	3	6.9	3
1,3-Dichlorobenzene	ND	3	ND	3	ND	3
1,4-Dichlorobenzene	ND	3	ND	3	ND	3
1,2-Dichlorobenzene	ND	3	ND	3	ND	3

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	107	107	108
Toluene-d8	95	94	93
Bromofluorobenzene	98	98	100



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EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 22038

Method Blank(s)

CK041.09-01

Conc. RL

ug/L

Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
Dichloromethane	ND	10
Acetone	ND	40
Carbon Disulfide	ND	3
Trichlorofluoromethane	ND	3
1,1-Dichloroethene	ND	3
1,1-Dichloroethane	ND	3
t-1,2-Dichloroethene	ND	3
Chloroform	ND	3
1,2-Dichloroethane	ND	1
2-Butanone	ND	20
1,1,1-Trichloroethane	ND	3
Carbon tetrachloride	ND	3
Vinyl Acetate	ND	10
Bromodichloromethane	ND	3
1,2-Dichloropropane	ND	3
c-1,2-Dichloroethene	ND	3
c-1,3-Dichloropropene	ND	3
Trichloroethene	ND	3
Dibromochloromethane	ND	3
1,1,2-Trichloroethane	ND	3
Benzene	ND	1
t-1,3-Dichloropropene	ND	3
Bromoform	ND	3
4-methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Tetrachloroethene	ND	3
1,1,2,2-Tetrachloroethane	ND	3
Toluene	ND	3
Chlorobenzene	ND	3
Ethyl Benzene	ND	3
Styrene	ND	3
Xylenes	ND	3
1,3-Dichlorobenzene	ND	3



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EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 22038

Method Blank(s)

CK041.09-01

Conc. RL

ug/L

1,4-Dichlorobenzene	ND	3
1,2-Dichlorobenzene	ND	3

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4	108
Toluene-d8	95
Bromofluorobenzene	100



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EPA SW-846 Method 8240 Volatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 22038

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Water Matrix (ug/L)						
CK041.09 02 / - Laboratory Control Spikes						
1,1-Dichloroethene		40	32	80	61-145	
Trichloroethene		40	34	85	71-120	
Benzene		40	35	88	76-127	
Toluene		40	34	85	76-125	
Chlorobenzene		40	38	95	75-130	

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4				107	84-128	
Toluene-d8				94	84-118	
Bromofluorobenzene				98	48-123	

For Water Matrix (ug/L)

CK041.09 03 / 04 - Sample Spiked: 22038 - 01

1,1-Dichloroethene	ND	40	32/32	80/80	61-145	0
Trichloroethene	ND	40	35/35	88/88	71-120	0
Benzene	ND	40	35/35	88/88	76-127	0
Toluene	ND	40	35/35	88/88	76-125	0
Chlorobenzene	ND	40	38/37	95/93	75-130	2

>> Surrogate Recoveries (%) <<

1,2-Dichloroethane-d4				108/106	84-128	
Toluene-d8				94/93	84-118	
Bromofluorobenzene				95/94	48-123	

Definitions:

ND = Not Detected
 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
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