CAMBRIA

August 25, 2003

Alameda County
AUG 29 2003
Environmental Health

Mr. Amir Gholami
Hazardous Materials Specialist
Alameda County Health Care Services Agency-
Environmental Health Services (ACHCSA-EHS)
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-9335

Re: **Regulatory Response**
Former Signal Oil Marine Storage and Distribution Facility (#20-6127)
2301 Blanding Avenue
Alameda, California
Cambria Project no. 31D-1916

Mr. Gholami:

On behalf of Chevron Products Company (Chevron), Cambria Environmental (Cambria) is submitting this response to an ACHCSA letter of October 16, 2002. A copy of this letter is presented as Attachment A. Cambria has recently become Chevron's consultants on projects in Alameda County. We have reviewed available data from previous investigations at this site and have developed this proposal. A brief background and site history follow.

SITE BACKGROUND AND HISTORY

A preliminary site assessment was performed by CET Environmental Services and summarized in a report dated January 13, 1995. The report indicated that a Signal Oil and Gas Company fuel distribution facility operated at the site from at least 1930 until about 1961. Figure 1 shows the location of the former Signal Oil facility.

Eight aboveground storage tanks, concrete secondary containment walls, underground piping, offices and storage buildings, a loading rack and pumping station were used to store and distribute fuels and lubricants. Storage and distribution operations were located on the western quarter of the site. Between 1957 and 1963, the buildings at the site were reportedly removed. From 1973 to 1983, the northwestern portion of the site was used as a construction yard and for boat repair services. A

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restaurant and paved parking area, and possibly an automobile sales lot reportedly occupied the southeastern portion of the site during this time. Since 1987, the site has been used as an office center and marina. Existing improvements include office buildings, a paved parking lot, walking paths landscaping and a concrete seawall and boat slips along the Alameda Canal.

Several phases of environmental investigations have been performed at the site and are summarized below. Sample locations and results are illustrated on figures presented in Attachment B.

On February 17 and 20, 1995, Geomatrix advanced eight soil borings (SB-1 through SB-8) at the site. Total Petroleum Hydrocarbons as gasoline (TPHg; up to 2,000 parts per million, or ppm), Total Petroleum Hydrocarbons as diesel (TPHd; up to 250 ppm) and benzene (up to 3.7 ppm) were detected in soil samples from the borings. The historical information supplied by Chevron did not contain analytical results for groundwater samples collected from the borings, but did indicate that groundwater beneath the site was impacted.

Geomatrix collected additional groundwater samples from ten shallow borings (GWS-7 through GWS-16) in April 1995. TPHg (up to 22,000 parts per billion, or ppb) were detected in five borings, TPHd (up to 1,200 ppb) were detected in four borings, and benzene (up to 6,200 ppb) were detected in three borings. The borings containing detectable hydrocarbon concentrations are located in the northern corner of the site, with the highest concentrations detected in boring GWS-9.

Four additional borings (SB-9 through SB-12) were advanced at the site by RRM, Inc. on October 28 and 29, 1998, as part of a Tier 2 Risk Based Corrective Action (RBCA) assessment. TPHg (up to 2,200 ppm), TPHd (up to 2,900 ppm) and benzene (up to 3.3 ppm) were detected in soil samples from borings SB-9, SB-10 and SB-11. MTBE was detected in boring SB-9 in a soil sample collected at 13 feet below grade (fbg)at a concentration of 12 ppm by EPA method 8020. TPHg (up to 14,000 ppb), TPHd (up to 83,000 ppb) and benzene (up to 1,400 ppb) were detected in groundwater samples from borings SB-9, SB-10 and SB-11. The highest hydrocarbon concentrations in soils and groundwater were detected in boring SB-9. Water samples collected from Alameda Canal, adjacent to the site, were non-detect for TPHg, TPHd, benzene and MTBE. Based on depth to water data collected from the borings which were temporarily cased and monitored over a 2-day period, groundwater flow was to the north toward Alameda Canal at an approximate gradient of 0.01.

As indicated above, an area defined as "the northwestern portion" of the site had been used as a construction yard and for boat repair services from 1973 until 1983. The true extent of the area used for these purposes is poorly defined. Data indicate that in 1998, samples collected from boring SB-9 contained 12 ppm MTBE at 13 fbg. MTBE is a chemical that was first developed in 1973 and not blended into fuel in northern California until the mid-1980s. Therefore, its presence beneath the site cannot be attributed to any operations conducted prior to that time. This indicates that, at least

partially, the impacts observed to the subsurface are attributable to activities conducted on the site after Signal Oil (Chevron) ceased its operations. This may have resulted from operations on the site described above or perhaps from fill material being brought to the site as it was being redeveloped in 1987.

The hydrograph (RRM, 1998) presented in Attachment C illustrates that tidal fluctuations have minimal influence on groundwater flow beneath the site. Additionally, Table 3 (RRM, 1998) in Attachment A indicate total organic carbon concentrations that would tend to stabilize hydrocarbons by adsorption. Data from water samples collected from both MW-1 and from Alameda Canal suggest that the plume is stable and migration toward and into the canal is not occurring.

PROPOSED INTERIM ACTION

Analytic results of TPHg, TPHd and BTEX in samples collected from well MW-1 have illustrated overall downward trends since groundwater monitoring began in January 2001. Analysis of sample CS-2, collected from Alameda Canal, have shown no detectable concentrations of all analyzed constituents until the July 2003 sampling event. Laboratory reports for this sampling event indicate the presence of toluene and xylenes slightly above the detection limits at concentrations of 0.7 ppb and 0.6 ppb, respectively. Considering the proximity of the dock and the condition of some vessels moored there, these concentrations are more likely attributable to contaminants entering the canal from other sources than the subject site.

Interim corrective action has been requested in your letter of October 16, 2002. Due to the proximity of previous borings and well MW-1 to the rip-rap slope along the edge of the canal, Cambria proposes to continue monitoring groundwater conditions beneath the site in MW-1 and continue to collect water samples from the Alameda Canal to verify that conditions beneath the site are not negatively impacting water quality of the canal. The water sample from the canal (CS-2) will continue to be collected directly opposite well MW-1 at the approximate location indicated on Figure 2. Due to the historically industrial nature of activities along the canal, two additional samples will be collected in the approximate locations of CS-1 and CS-3 as a comparison to results seen in sample CS-2. All samples will be analyzed for TPHg, TPHd and BTEX/MTBE and results will be reported to your office as soon as available.

Additionally, a site visit revealed a water seep on the slope above the canal at a level approximately consistent with the water level in MW-1. Cambria proposes to collect a soil sample from this slope and conduct the same analyses as conducted on groundwater samples from MW-1. Due to the historically industrial nature of activity, as mentioned above, we will collect two additional samples

on the slope, north and south of MW-1 for comparison. Locations of these proposed soil samples are indicated on Figure 2.

Upon receipt of soil sample analytic results, we will evaluate conditions and recommend any appropriate changes to the current scope.

CLOSING

Please review the proposal presented in this response to the September 10, 2002 letter. We will implement the recommended action upon receipt of your written concurrence. Please direct any questions or comments you may have to me at (510) 420-3348.

Sincerely,
Cambria Environmental Technology, Inc.

Robert Foss

Robert Foss, R.G..
Senior Project Geologist

REGISTERED GEOLOGIST
ROBERT C. FOSS
exp 08/04
No. 7445
STATE OF CALIFORNIA

Figures: 1- Site Vicinity Map
2 - Site Plan with Proposed Grab Soil Sample Locations

Attachments: A - October 16, 2002 ACHCSA letter
B - Figures from Previous Environmental Investigations
C - RRM Hydrograph (10/98) and RRM Table of Physical Properties of Soils

cc: Ms. Karen Streich, Chevron Products Company

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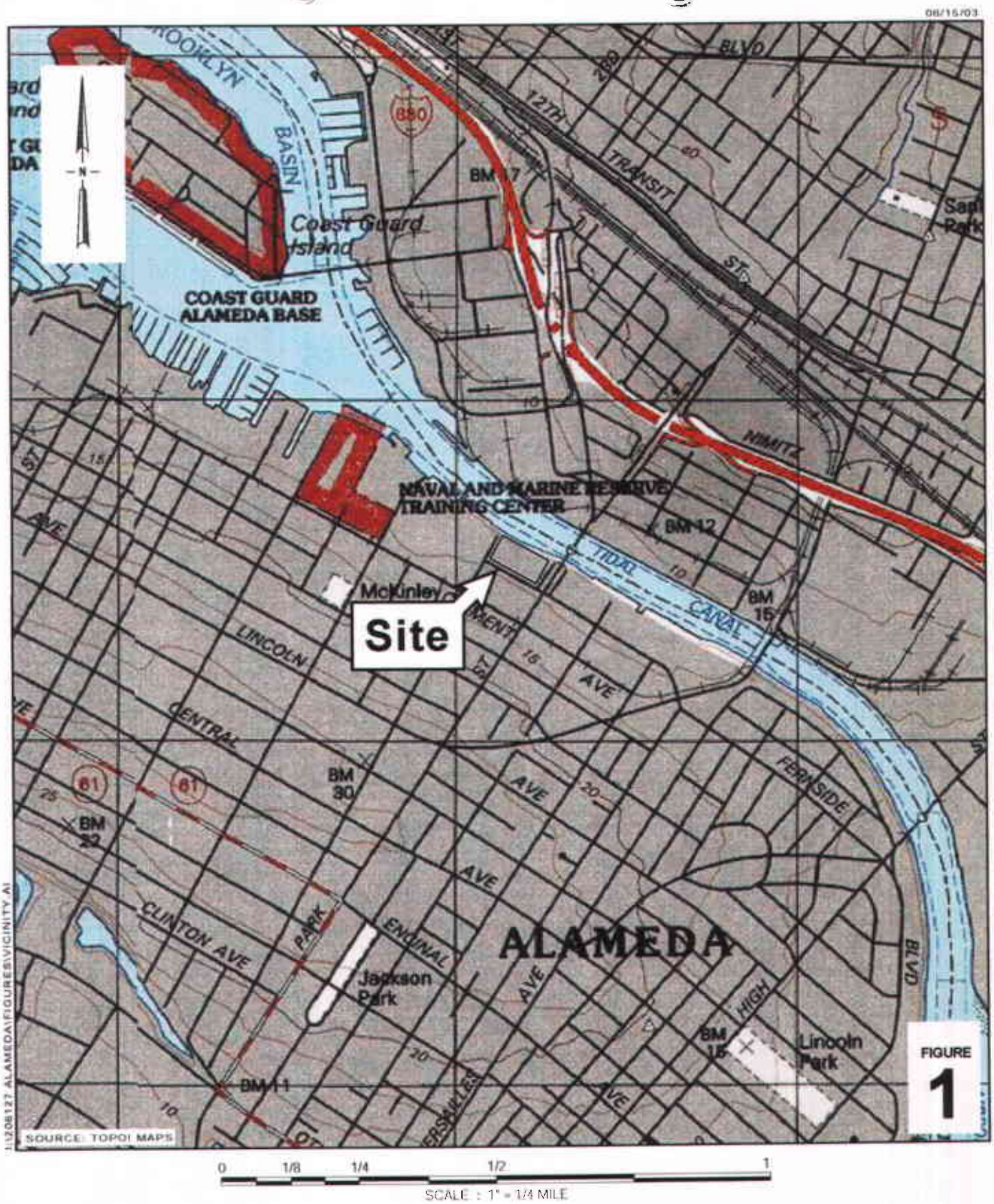


Chevron # 206127
Former Signal Oil Bulk Plant

2301-2311 Blanding Avenue

Alameda, California

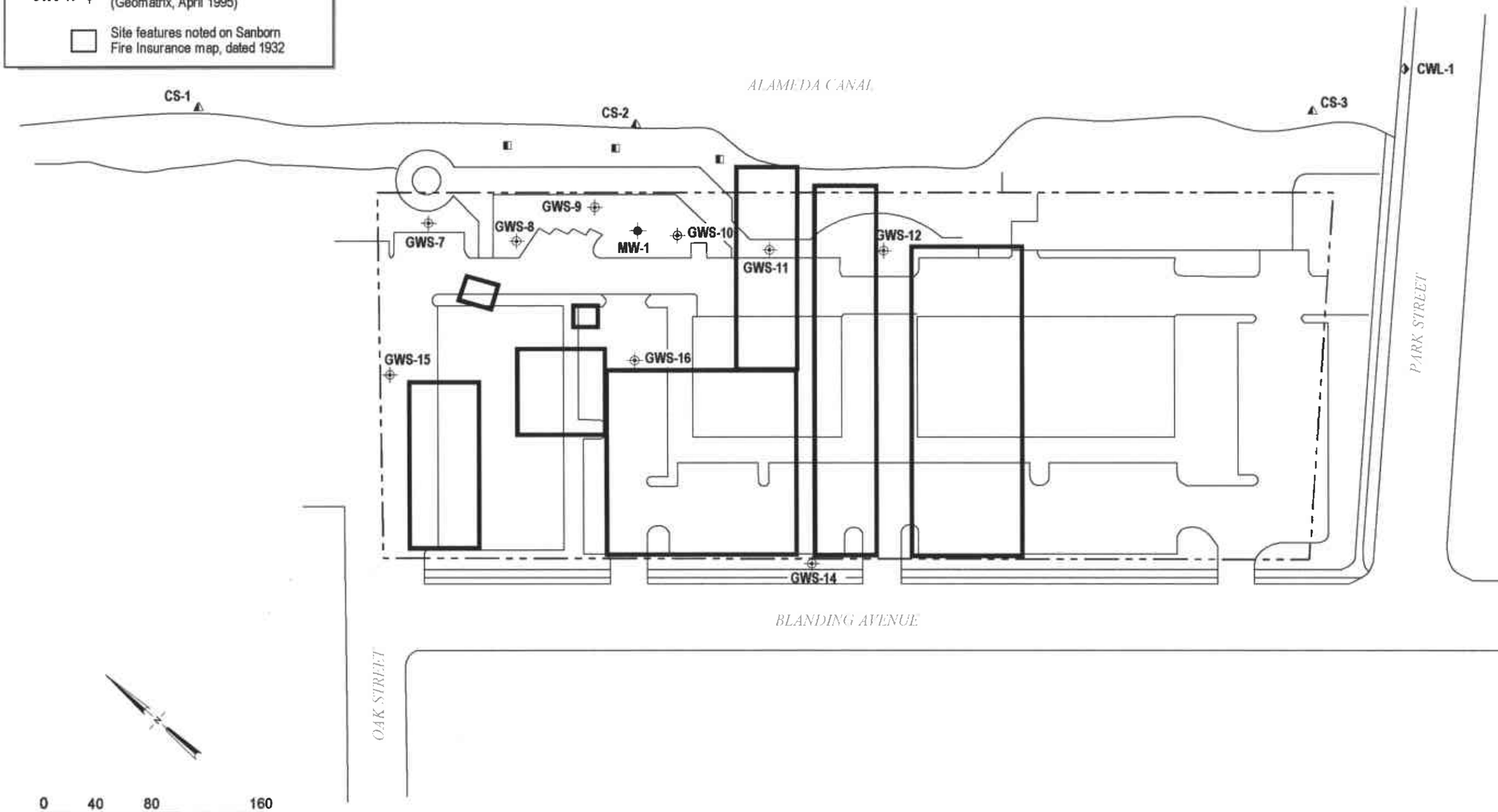
CAMBRIA

Vicinity Map

08/14/03

EXPLANATION

- MW-1 — Monitoring Well Location
- CWL-1 — Canal water level gauging station from Park Street bridge (RRM, October 1998)
- CS-2 — Canal grab surface water sample
- Grab soil sample
- GWS-10 — Shallow groundwater survey point (Geomatrix, April 1995)
- Site features noted on Sanborn Fire Insurance map, dated 1932



0 40 80 160

Scale (ft)

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Site Plan

CAMBRIA

Chevron # 206127
Former Signal Oil Bulk Plant
2301-2311 Blanding Avenue
Alameda, California

FIGURE
2

ATTACHMENT A

October 16, 2002 ACHCSA Letter

December 18, 2002 Delta Environmental Letter

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

206127

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502
(510) 567-6700
Fax (510) 337-9335

CO0000065

October 16, 2002

Ms. Karen Streich
Chevron Products
P.O. Box 6004
San Ramon, CA 94583

RE: Interim Remedial Action for 2301 Blanding Ave, Alameda, CA

Dear Ms. Streich:

I have completed review of Gettler-Ryan's September 2002 *Groundwater Monitoring and Sampling Report* prepared for the above referenced site. The latest groundwater sampling event in July 2002 identified TPHd at 2,800 ug/l, TPHg at 930 ug/l, and benzene at 64 ug/l. These levels exceed the Saltwater Ecological Protection Zone screening levels and the RWQCB's RBSL for Aquatic Life Protection.

At this time, interim remedial action is required to prevent the migration of contaminants into the Oakland Estuary/Alameda Canal. A workplan that will identify and evaluate feasible alternatives for the cleanup of the unauthorized release of fuel hydrocarbons is required within 60 days of the date of this letter **or by December 23, 2002.** You may find that additional investigations are necessary to better characterize soil and groundwater contamination along the Alameda Canal in the vicinity of boreholes GWS-8 through GWS-11 that were advanced in 1995. Your workplan can include additional proposed subsurface investigations, if warranted.

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

email: James Brownell (Delta Environmental)

blanding(chev)5

Delta
Environmental
Consultants, Inc.

3164 Gold Camp Drive
Suite 200
Rancho Cordova, California 95670-6021
916/638-2085
FAX: 916/638-8385

COPY

December 18, 2002

Ms. Eva Chu
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: Former Chevron #206127, 2301-2337 Blanding Avenue, Alameda, California.

Ms. Chu:

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants, Inc. network associate Gettler-Ryan Inc. (GR) has prepared this letter in response to Alameda County Health Care Services Agency (ACHCSA) letter dated October 16, 2002. ACHCSA requested a work plan for interim remedial action be submitted by December 23, 2002.

Chevron has informed GR that this site will be transferred to a new consultant in January of 2003. Based on this, GR is requesting an extension from December 23, 2002 to February 28, 2003 for work plan submittal. This time frame should be adequate for the new consultant to review the site data and submit the requested work plan. If you should have any questions, please call our Sacramento office at 916.631.1300.

Sincerely,
Delta Environmental Consultants, Inc.
network associate Gettler-Ryan Inc.

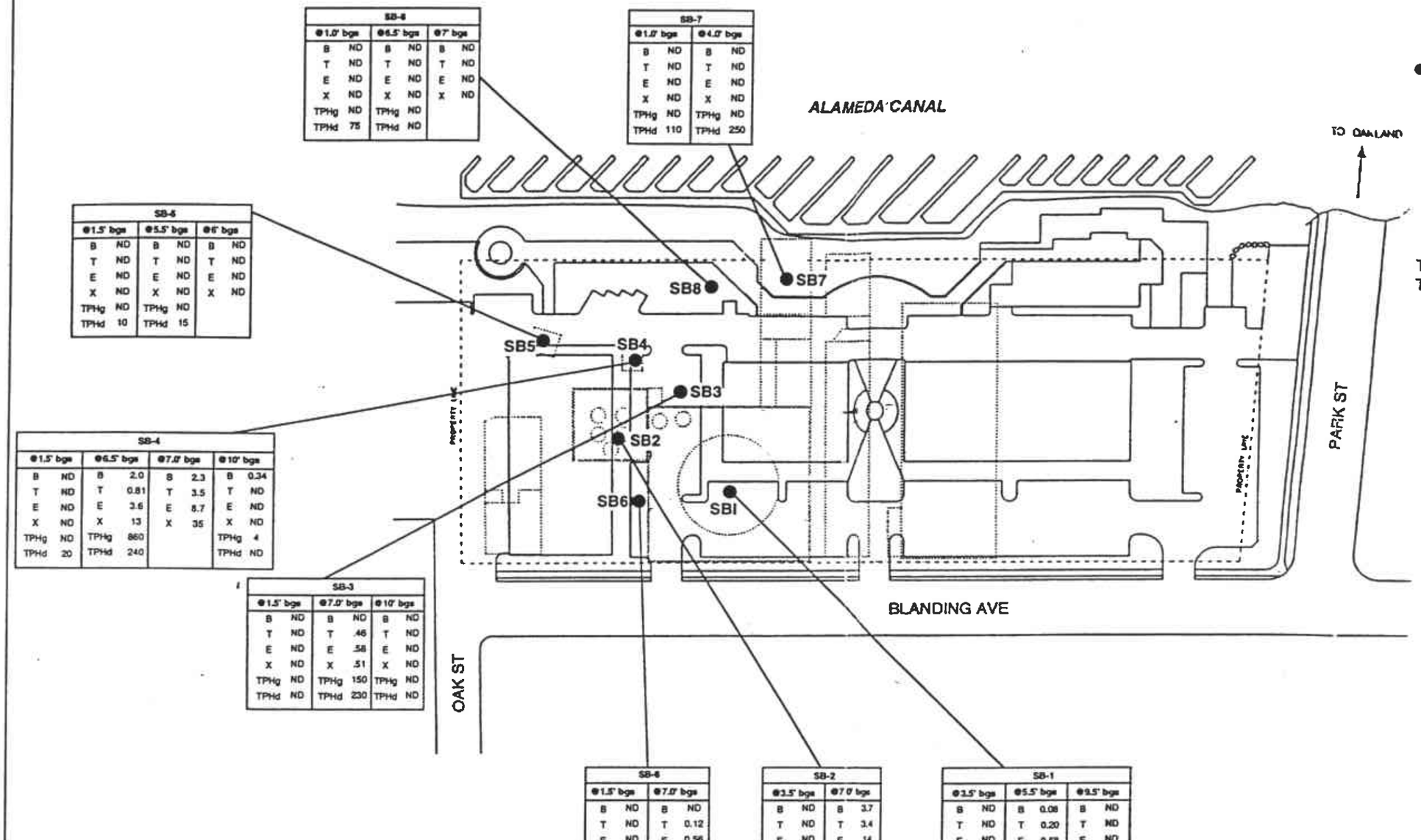
Greg A. Gurss
Sr. Project Manager

c: Ms. Karen Streich, Chevron Products Company, P.O. Box 6012, San Ramon, CA 94583
Mr. Jim Brownell, Delta Environmental, 3164 Gold Camp Drive, Suite 200, Rancho Cordova 95670

ATTACHMENT B

Figures from Previous

Environmental Investigations



SB-6					
@1.0' bgs		@6.5' bgs		@7' bgs	
B	ND	B	ND	B	ND
T	ND	T	ND	T	ND
E	ND	E	ND	E	ND
X	ND	X	ND	X	ND
TPHg	ND	TPHg	ND		
TPHd	75	TPHd	ND		

SB-7			
@1.0' bgs		@4.0' bgs	
B	ND	B	ND
T	ND	T	ND
E	ND	E	ND
X	ND	X	ND
TPHg	ND	TPHg	ND
TPHd	110	TPHd	250

SB-5					
@1.5' bgs		@5.5' bgs		@6' bgs	
B	ND	B	ND	B	ND
T	ND	T	ND	T	ND
E	ND	E	ND	E	ND
X	ND	X	ND	X	ND
TPHg	ND	TPHg	ND		
TPHd	10	TPHd	15		

SB-4							
@1.5' bgs		@6.5' bgs		@7.0' bgs		@10' bgs	
B	ND	B	2.0	B	2.3	B	0.34
T	ND	T	0.81	T	3.5	T	ND
E	ND	E	3.6	E	8.7	E	ND
X	ND	X	13	X	35	X	ND
TPHg	ND	TPHg	860			TPHg	4
TPHd	20	TPHd	240			TPHd	ND

SB-3					
@1.5' bgs		@7.0' bgs		@10' bgs	
B	ND	B	ND	B	ND
T	ND	T	.46	T	ND
E	ND	E	.58	E	ND
X	ND	X	.51	X	ND
TPHg	ND	TPHg	150	TPHg	ND
TPHd	ND	TPHd	230	TPHd	ND

SB-8			
@2.5' bgs		@7.0' bgs	
B	ND	B	ND
T	ND	T	0.12
E	ND	E	0.56
X	ND	X	ND
TPHg	ND	TPHg	400
TPHd	40	TPHd	170

SB-2			
@3.5' bgs		@7.0' bgs	
B	ND	B	3.7
T	ND	T	3.4
E	ND	E	14
X	ND	X	46
TPHg	ND	TPHg	2,000
TPHd	40	TPHd	35

SB-1					
@3.5' bgs		@5.5' bgs		@9.5' bgs	
B	ND	B	0.08	B	ND
T	ND	T	0.20	T	ND
E	ND	E	0.58	E	ND
X	ND	X	0.86	X	ND
TPHg	ND	TPHg	390	TPHg	ND
TPHd	110	TPHd	10	TPHd	ND

EXPLANATION

● SB1 Soil boring location

☐ Site features noted on a 1932 Sanborn Fire Insurance Map

Detected Constituents:

- B Benzene
- T Toluene
- E Ethylbenzene
- X Xylenes
- TPHg Total Petroleum Hydrocarbons as gasoline
- TPHd Total Petroleum Hydrocarbons as diesel

All results in milligrams/kilograms

Samples Collected and Depth		Analyzed for:			
		TPH gas	TPH diesel	BTEX	8240
SB-1	3.5'	X	X	X	
SB-1	5.5'	X	X	X	
SB-1	9.5'	X	X	X	
SB-2	3.5'	X	X	X	
SB-2	7.0'	X	X	X	
SB-2	10.0'				
SB-3	1.5'	X	X	X	
SB-3	7.0'	X	X	X	
SB-3	10.0'	X	X	X	
SB-4	1.5'	X	X	X	
SB-4	6.5'	X	X	X	
SB-4	7.0'				X
SB-4	10.0'	X	X	X	
SB-5	1.5'	X	X	X	
SB-5	5.5'	X	X	X	
SB-5	6.0'				X
SB-5	10.0'				
SB-6	1.5'	X	X	X	
SB-6	7.0'	X	X	X	
SB-6	9.5'				
SB-7	1.0'	X	X	X	
SB-7	4.0'	X	X	X	
SB-7	9.5'				
SB-8	1.0'	X	X	X	
SB-8	6.5'	X	X	X	
SB-8	7.0'				X
SB-8	9.5'				

Note:

TPH = Total Petroleum Hydrocarbons
8240 = EPA Method 8240 for VOCs

0 100 Feet

Approximate

CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS (VOCs) AND PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLES
Park Street Landing Site
Alameda, California

GEOMATRIX | Project No. 2436.02 | Figure 3

2436.02.010

TABLE 2

PETROLEUM HYDROCARBONS AND VOLATILE ORGANIC COMPOUNDS
ANALYTICAL RESULTS OF SOIL INVESTIGATION

Park Street Landing Site
Alameda, California

(concentrations in mg/kg)[1]

Sample Name	TPHg[2]	TPHd[3]	Benzene[4]	Toluene[5]	Ethylbenzene[6]	Xylenes[7]	8240 Compound[8]
SB-1-3.5'	ND[9]	110	ND	ND	ND	ND	NA[10]
SB-1-5.5'	390	10	0.08	0.20	0.58	0.86	NA
SB-1-9.5'	ND	ND	ND	ND	ND	ND	NA
SB-2-3.5'	ND	40	ND	ND	ND	ND	NA
SB-2-7.0'	2000	35	3.7	34	14	46	NA
SB-3-1.5'	ND	ND	ND	ND	ND	ND	NA
SB-3-7.0'	150	230	ND	0.46	0.58	0.51	NA
SB-3-10.0'	ND	ND	ND	ND	ND	ND	NA
SB-4-1.5'	ND	20	ND	ND	ND	ND	NA
SB-4-6.5'	860	240	2.0	0.81	3.6	13	NA
SB-4-7.0'	NA	NA	NA	NA	NA	NA	Benzene @ 2.3, ethylbenzene @ 8.7, toluene @ 3.5, xylenes @ 35
SB-4-10.0'	4	ND	0.34	ND	ND	ND	NA
SB-5-1.5'	ND	10	ND	ND	ND	ND	NA
SB-5-5.5'	ND	15	ND	ND	ND	ND	NA
SB-5-6.0'	NA	NA	NA	NA	NA	NA	ND

TABLE 2

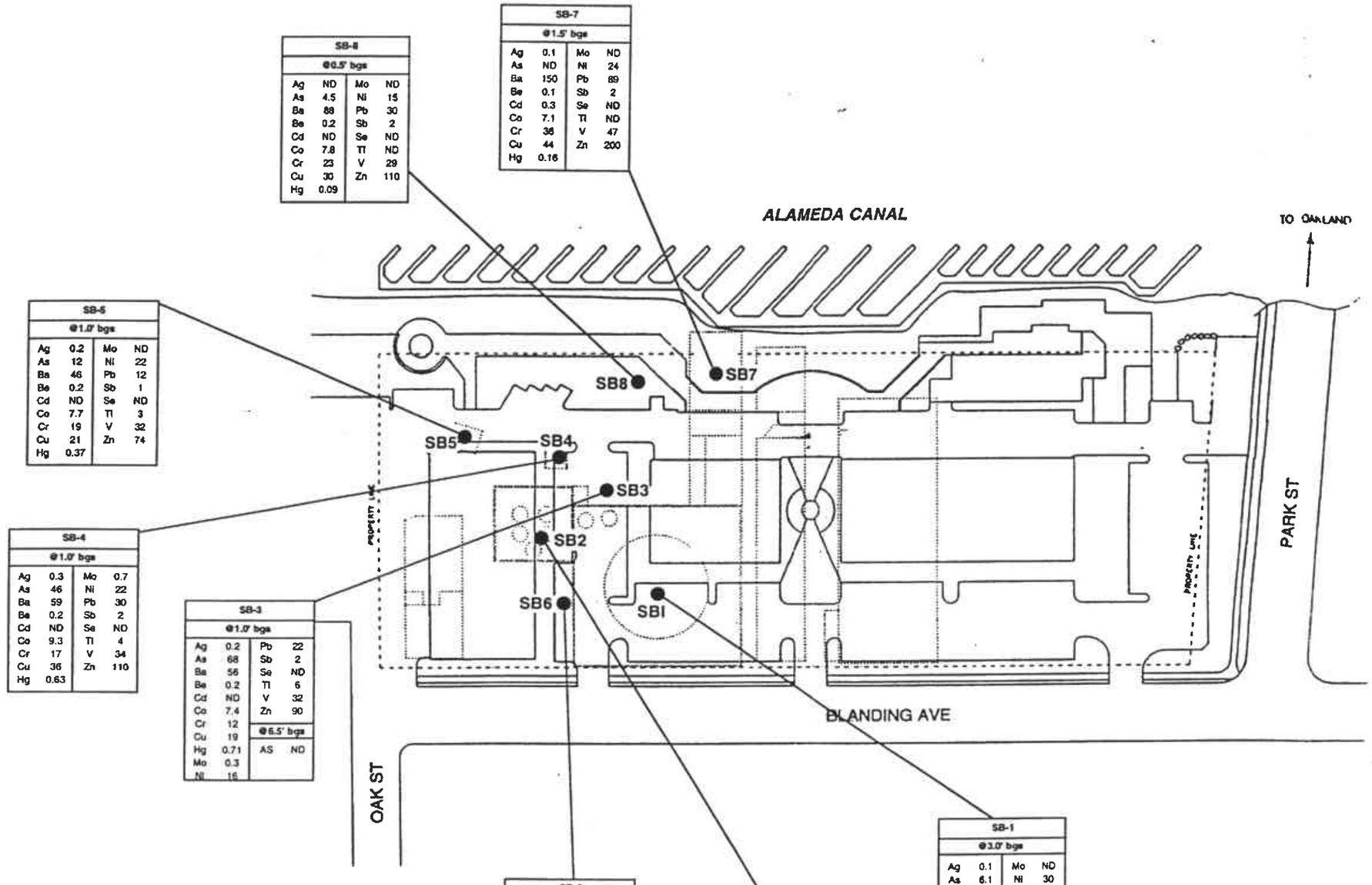
PETROLEUM HYDROCARBONS AND VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS OF SOIL INVESTIGATION

(concentrations in mg/kg)[1]

Sample Name	TPHg[2]	TPHd[3]	Benzene[4]	Toluene[5]	Ethylbenzene[6]	Xylenes[7]	8240 Compound[8]
SB-6-1.5'	ND	40	ND	ND	ND	ND	NA
SB-6-7.0'	400	170	ND	0.12	0.56	ND	NA
SB-7-1.0'	ND	110	ND	ND	ND	ND	NA
SB-7-4.0'	ND	250	ND	ND	ND	ND	NA
SB-8-1.0'	ND	75	ND	ND	ND	ND	NA
SB-8-6.5'	ND	ND	ND	ND	ND	ND	NA
SB-8-7.0'	NA	NA	NA	NA	NA	NA	ND

Notes:

1 mg/kg - milligrams per kilogram.
2 TPHg - Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8015.
3 TPHd - Total petroleum hydrocarbons as diesel analyzed by EPA Method Modified 8015.
4 Analyzed by EPA Method 8020
5 Analyzed by EPA Method 8020
6 Analyzed by EPA Method 8020
7 Analyzed by EPA Method 8020
8 Analyzed by EPA Method 8240
9 ND - Concentration of constituent was not detected above the reporting limit.
10 NA - Sample not analyzed for this constituent.



SB-8 @0.5' bgs			
Ag	ND	Mo	ND
As	4.5	Ni	15
Ba	88	Pb	30
Be	0.2	Sb	2
Cd	ND	Se	ND
Co	7.8	Tl	ND
Cr	23	V	29
Cu	30	Zn	110
Hg	0.09		

SB-7 @1.5' bgs			
Ag	0.1	Mo	ND
As	ND	Ni	24
Ba	150	Pb	89
Be	0.1	Sb	2
Cd	0.3	Se	ND
Co	7.1	Tl	ND
Cr	36	V	47
Cu	44	Zn	200
Hg	0.16		

SB-5 @1.0' bgs			
Ag	0.2	Mo	ND
As	12	Ni	22
Ba	46	Pb	12
Be	0.2	Sb	1
Cd	ND	Se	ND
Co	7.7	Tl	3
Cr	19	V	32
Cu	21	Zn	74
Hg	0.37		

SB-4 @1.0' bgs			
Ag	0.3	Mo	0.7
As	46	Ni	22
Ba	59	Pb	30
Be	0.2	Sb	2
Cd	ND	Se	ND
Co	9.3	Tl	4
Cr	17	V	34
Cu	36	Zn	110
Hg	0.63		

SB-3 @1.0' bgs			
Ag	0.2	Pb	22
As	68	Sb	2
Ba	56	Se	ND
Be	0.2	Tl	6
Cd	ND	V	32
Co	7.4	Zn	90
Cr	12	@6.5' bgs	
Cu	19	AS	ND
Hg	0.71		
Mo	0.3		
Ni	16		

SB-6 @1.0' bgs			
Ag	0.7	Ni	23
As	130	Pb	32
Ba	67	Sb	4
Be	0.2	Se	ND
Cd	ND	Tl	8
Co	8.7	V	34
Cr	18	Zn	100
Cu	31	@6.5' bgs	
Hg	0.94	AS	ND
Mo	1.1		

SB-2 @2.0' bgs			
Ag	0.1	Mo	0.7
As	9.7	Ni	49
Ba	120	Pb	77
Be	0.1	Sb	2
Cd	ND	Se	ND
Co	11	Tl	ND
Cr	89	V	35
Cu	170	Zn	280
Hg	0.7		

SB-1 @3.0' bgs			
Ag	0.1	Mo	ND
As	6.1	Ni	30
Ba	110	Pb	110
Be	0.2	Sb	2
Cd	0.7	Se	ND
Co	9.6	Tl	7
Cr	39	V	37
Cu	51	Zn	210
Hg	0.43		

EXPLANATION

SB1 Soil boring location

Site features noted on a 1932 Sanborn Fire Insurance Map

Metal Analytes:

- Ag Silver
- As Arsenic
- Ba Barium
- Be Beryllium
- Cd Cadmium
- Co Cobalt
- Cr Chromium
- Cu Copper
- Hg Mercury
- Mo Molybdenum
- Ni Nickel
- Pb Lead
- Sb Antimony
- Se Selenium
- Tl Thallium
- V Vanadium
- Zn Zinc
- ND Not detected

All results in milligrams/kilograms

0 100 Feet

Approximate

CONCENTRATION OF METALS DETECTED IN SOIL SAMPLES
Park Street Landing Site
Alameda, California

GEOMATRIX | Project No. 2436.02 | Figure 2

2436.02.014

TABLE 1

METALS[1] ANALYTICAL RESULTS OF SOIL INVESTIGATION

Park Street Landing Site
Alameda, California

(concentrations in mg/kg)[2]

Sample Name	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Sb	Se	Tl	V	Zn
SB-1-3.0'	0.1	6.1	110	0.2	0.7	9.6	39	51	0.43	ND	30	110	2	ND	7	37	210
SB-2-2.0'	0.1	9.7	120	0.1	ND	11	89	170	0.70	0.7	49	77	2	ND	ND	35	280
SB-3-1.0'	0.2	68	56	0.2	ND	7.4	12	19	0.71	0.3	16	22	2	ND	6	32	90
SB-4-1.0'	0.3	46	59	0.2	ND	9.3	17	36	0.63	0.7	22	30	2	ND	4	34	110
SB-5-1.0'	0.2	12	46	0.2	ND	7.7	19	21	0.37	ND	22	12	1	ND	3	32	74
SB-6-1.0'	0.7	130	67	0.2	ND	8.7	16	31	0.94	1.1	23	32	4	ND	8	34	100
SB-7-1.5'	0.1	ND	150	0.1	0.3	7.1	36	44	0.16	ND	24	89	2	ND	ND	47	200
SB-8-0.5'	ND	4.5	88	0.2	ND	7.8	23	30	0.09	ND	15	30	2	ND	ND	29	110
TTLC[3] (mg/kg)	500	500	10,000	75	100	8,000	2,500	2,500	20	3,500	2,000	1,000	500	100	700	2,400	5,000
STLC[4] (mg/l)	5	5	100	0.75	1.0	80	560	25	0.2	350	20	5	15	1	7	24	250

Notes:

[1] CCR 17 metals include Ag-Silver, As-Arsenic, Ba-Barium, Be-Beryllium, Cd-Cadmium, Co-Cobalt, Cr-Chromium, Cu-Copper, Hg-Mercury, Mo-Molybdenum, Ni-Nickel, Pb-Lead, Sb-Antimony, Se-Selenium, Tl-Thallium, V-Vanadium, Zn-Zinc.
[2] mg/kg - milligrams per kilogram.
[3] TTLC - Total Threshold Limit Concentration.
[4] STLC - Soluble Threshold Limit Concentration.

N

SCALE

0 100 FEET

ALAMEDA CANAL

CS-1

CS-2

CS-3

CWL-1

TO OAKLAND

PARK STREET

Depth	TPPHg	TEPHd	BENZ	MtBE
5'-6'	130	2,200	0.36	<0.62
13'-14'	900	620	3.3	12
15'-16'	<1.0	<1.0	0.22	<0.025

Depth	TPPHg	TEPHd	BENZ	MtBE
5.5'-6.5'	<1.0	80	<0.0050	<0.025

Depth	TPPHg	TEPHd	BENZ	MtBE
6'-7'	140	27	<0.10	<0.50

Depth	TPPHg	TEPHd	BENZ	MtBE
5'-6'	<1.0	<1.0	<0.0050	<0.025
7'-8'	<1.0	<1.0	<0.0050	<0.025
14'-15'	<1.0	<1.0	<0.0050	<0.025

GWS-7, GWS-8, GWS-9, GWS-10, GWS-11, GWS-12, GWS-14, GWS-15

SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, SB-7, SB-8, SB-9, SB-10, SB-11, SB-12

BLANDING AVENUE

OAK STREET

EXPLANATION

- SOIL BORING (RRM, OCT. 1998)
- SOIL BORING (Pre-OCT. 1998)
- SHALLOW GROUNDWATER SURVEY POINT (GEOMATRIX, APRIL 1995)
- CANAL GRAB SURFACE WATER SAMPLE (RRM, OCT. 1998)
- CANAL WATER LEVEL GAUGING STATION FROM PARK STREET BRIDGE (RRM, OCT. 1998)
- SITE FEATURES NOTED ON A 1932 SANBORN FIRE INSURANCE MAP

TPPHg TOTAL PETROLEUM HYDROCARBON CALCULATED AS GASOLINE IN PARTS PER MILLION (ppm)

TEPHd TOTAL PETROLEUM HYDROCARBON CALCULATED AS DIESEL IN ppm

BENZ BENZENE, ppm

MtBE METHYL-TERT-BUTYL-ETHER, ppm

< NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT SHOWN

. AA46/Stamp100.dwg
ermap from Geomatrix

PREPARED BY

RRM

engineering contracting firm

FORMER SIGNAL OIL MARINE TERMINAL
2301-2332 Blanding Avenue
Alameda, California

SOIL CONCENTRATION MAP,
OCTOBER 28, 1998

FIGURE: 3

PROJECT: AA46

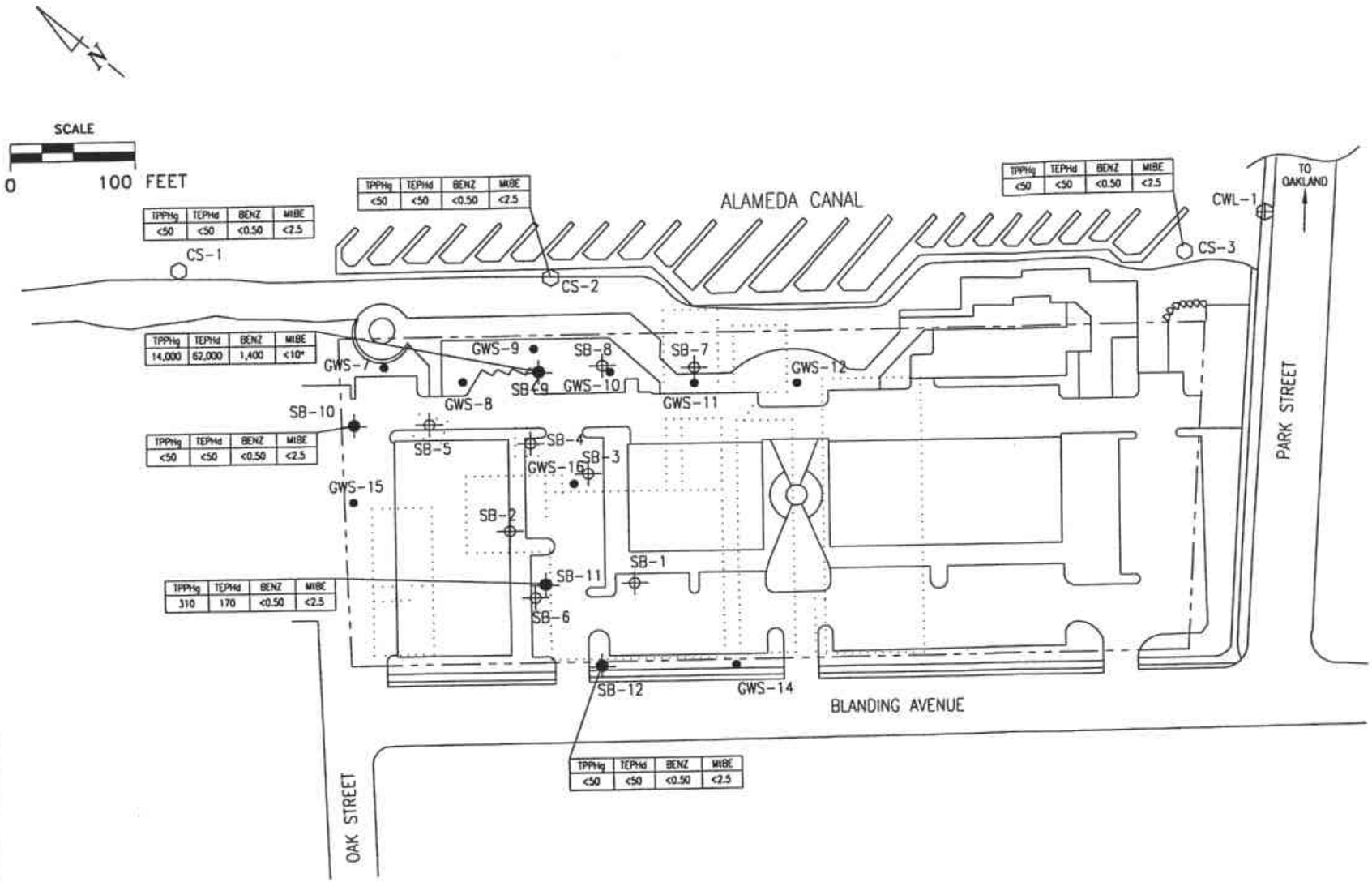
Table 1
Soil Analytical Data
(Petroleum Hydrocarbons)

Former Signal Oil Marine Terminal
2301-2337 Blanding Aveune
Alameda, California

Sample ID	Date Sampled	Sample Depth (feet)	TPPHg (ppm)	TEPHd (ppm)	TEPHd Silica Gel Cleanup First Round (ppm)	TEPHd Silica Gel Cleanup Second Round (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)	MtBE 8020 (ppm)
SB-9	10/28/98	5-6	130	3,300	2,900	2,200	0.36	<0.12	<0.12	0.28	<0.62
	10/28/98	13-14	900	1,300	940	620	3.3	<1.2	2.1	2.0	12
	10/28/98	15-16	<1.0	1.2	<1.0	--	0.22	<0.0050	<0.0050	<0.0050	<0.025
SB-10	10/28/98	5.5-6.5	<1.0	130	95	80	<0.0050	<0.0050	<0.0050	<0.0050	< 0.025
SB-11	10/28/98	6-7	140	60	38	27	<0.10	0.12	0.24	0.49	<0.50
SB-12	10/28/98	5-6	<1.0	<1.0	--	--	<0.0050	<0.0050	<0.0050	<0.0050	< 0.025
	10/28/98	7-8	<1.0	<1.0	--	--	<0.0050	<0.0050	<0.0050	<0.0050	< 0.025
	10/28/98	14-15	<1.0	<1.0	--	--	<0.0050	<0.0050	<0.0050	<0.0050	< 0.025

Notes :

TPPHg = Gasoline range total purgeable petroleum hydrocarbons
TEPHd = Diesel range total extractable petroleum hydrocarbons
MtBE = Methyl tertiary butyl ether
8020 = EPA Method 8020
ppm = Parts per million
-- = Not analyzed
< = Not detected at or above the specified detection limit



EXPLANATION

- SOIL BORING (RRM, OCT. 1998)
- SOIL BORING (Pre-OCT. 1998)
- SHALLOW GROUNDWATER SURVEY POINT (GEOMATRIX, APRIL 1995)
- CANAL GRAB SURFACE WATER SAMPLE (RRM, OCT. 1998)
- CANAL WATER LEVEL GAUGING STATION FROM PARK STREET BRIDGE (RRM, OCT. 1998)
- SITE FEATURES NOTED ON A 1932 SANBORN FIRE INSURANCE MAP

TPPHg — TOTAL PETROLEUM HYDROCARBON CALCULATED AS GASOLINE IN PARTS PER BILLION (ppb)

TEPHd — TOTAL PETROLEUM HYDROCARBON CALCULATED AS DIESEL IN ppb

BENZ — BENZENE, ppb

MtBE — METHYL-TERT-BUTYL-ETHER, ppb

* — MtBE BY 8260

< — NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT SHOWN

PREPARED BY
RRM
engineering contracting firm

FORMER SIGNAL OIL MARINE TERMINAL
2301-2332 Blanding Avenue
Alameda, California

GROUNDWATER CONCENTRATION MAP, OCTOBER 28, 1998

FIGURE: 4
PROJECT: AA46

Ref. AA46/Stemp100.dwg
Basemap from Geomatrix

Table 2
Groundwater Analytical Data
(Petroleum Hydrocarbons)

Former Signal Oil Marine Terminal
2301-2337 Blanding Aveune
Alameda, California

Sample ID	Date Sampled	TPPHg (ppb)	TEPHd (ppb)	TEPHd Silica Gel Cleanup First Round (ppb)	TEPHd Silica Gel Cleanup Second Round (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE 8020 (ppb)	MtBE 8260* (ppb)
SB-9	10/28/98	14,000	--	83,000	62,000	1,400	58	490	630	280	<10
SB-10	10/28/98	<50	--	97	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--
SB-11	10/28/98	310	--	270	170	<0.50	0.69	1.6	2.4	<2.5	--
SB-12	10/28/98	<50	--	<50	--	<0.50	<0.50	<0.50	<0.50	<2.5	--
CS-1	10/28/98	<50	--	<50	--	<0.50	<0.50	<0.50	<0.50	<2.5	--
CS-2	10/28/98	<50	--	<50	--	<0.50	<0.50	<0.50	<0.50	<2.5	--
CS-3	10/28/98	<50	--	<50	--	<0.50	<0.50	<0.50	<0.50	<2.5	--

Notes :

TPPHg = Gasoline range total purgeable petroleum hydrocarbons
TEPHd = Diesel range total extractable petroleum hydrocarbons
MtBE = Methyl tertiary butyl ether
8020 = EPA Method 8020
8060 = EPA Method 8060
ppb = Parts per billion
-- = Not analyzed
< = Not detected at or above the specified detection limit
* = 8260 analyzed beyond recommended holding time

ATTACHMENT C

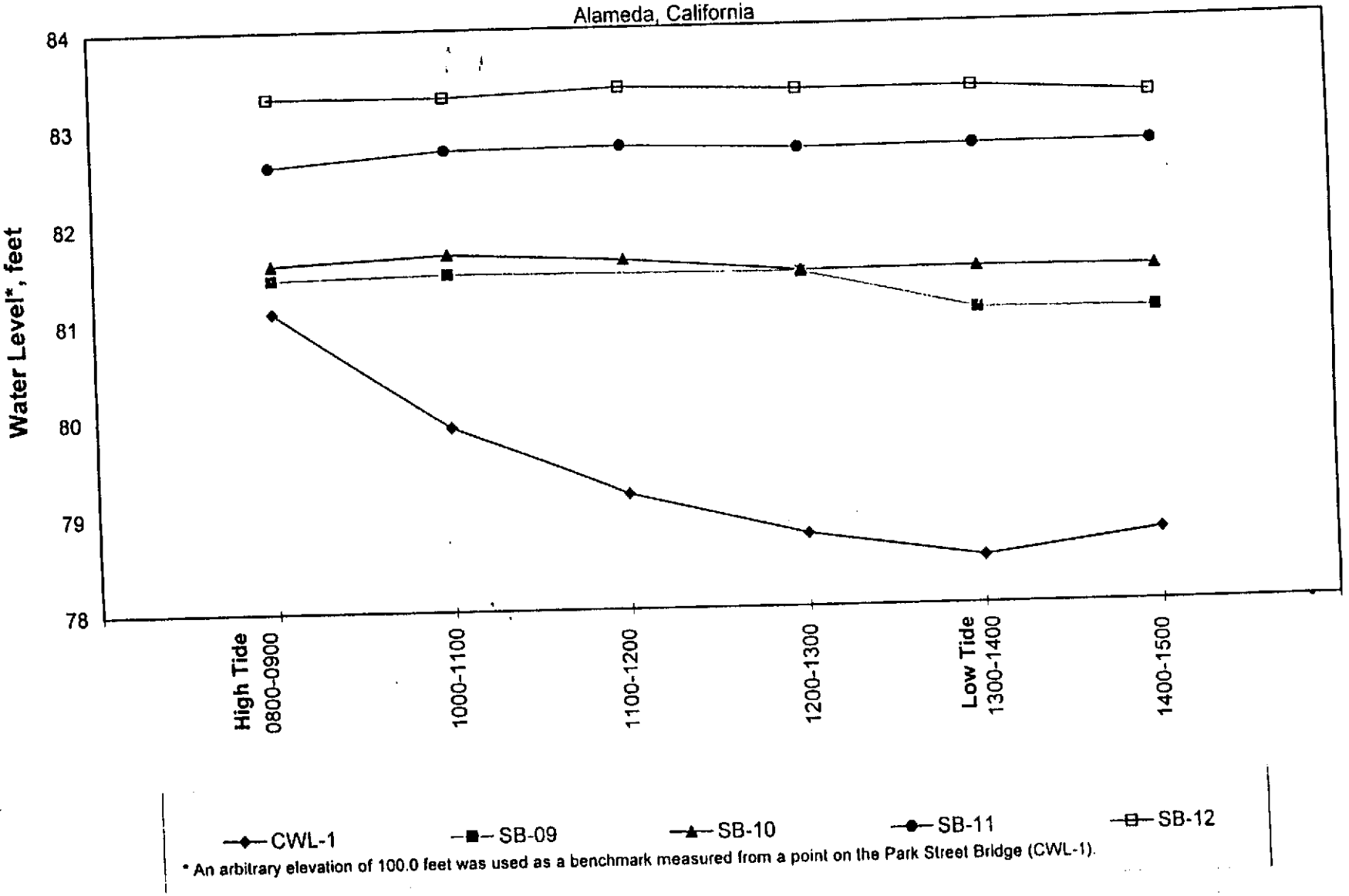
RRM Hydrographs (10/98) and

RRM Table of Physical Properties of Soils

Figure 6

Soil Boring and Benchmark Hydrograph for October 29, 1998

Former Signal Oil Marine Terminal
2301-2332 Blanding Avenue
Alameda, California



* An arbitrary elevation of 100.0 feet was used as a benchmark measured from a point on the Park Street Bridge (CWL-1).

Table 3
Physical Properties of Soils

Former Signal Oil Marine Terminal
2301-2337 Blanding Avenue
Alameda, California

Sample ID	Date Sampled	Sample Depth (feet)	Soil Type	Total Organic Carbon (mg/kg)	Percent Porosity	Void Ratio	Percent Saturation	Percent Moisture	Natural Bulk Density (g/cc)	Dry Bulk Density (g/cc)
SB-9	10/28/98	4-5	Gray, silty sand with gravel	1,800	30.9	0.45	91.6	18.1	1.85	1.57
	10/28/98	9.5-10.5	Gray,sandy clayey silt	590	30.2	0.43	99.7	16.1	2.18	1.88
SB-10	10/28/98	3-4	Gray, slightly silty sand	900	30.6	0.44	56.2	9.3	2.03	1.86
	10/28/98	6.5-7	Gray, sandy clayey silt with slight gravel	2,000	42.3	0.73	99.9	30.6	1.80	1.38
SB-11	10/28/98	2.5-3.5	Gray, silty sand with gravel	1,200	30.0	0.43	99.8	16.1	2.16	1.86
	10/28/98	7-8	Gray, silty sand with slight clay	240	24.8	0.33	64.6	8.0	2.16	2.00
SB-12	10/28/98	2-3	Gray, silty sand with gravel	1,200	26.5	0.36	97.4	13.2	2.22	1.96
	10/28/98	6-7	Gray, sandy clayey silt	120	29.9	0.43	99.7	16.0	2.16	1.86

Notes:

mg/kg = Milligrams per kilogram
g/cc = Grams per cubic centimeter
Methods: Porosity, Water Satruation and Density performed using API RP-40; Moisture Content performed by ASTM D-2216