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January 24, 2002

Susan Hugo
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **On/Offsite Subsurface Investigation Work Plan**
Shell-branded Service Station
5755 Broadway
Oakland, California
Incident #98995756
Cambria Project #244-0483

JAN 31 2002

Dear Ms. Hugo:

Cambria Environmental Technology, Inc. (Cambria) is submitting this work plan on behalf of Equiva Services LLC. The work plan proposes to define the on- and offsite extent of hydrocarbons and fuel oxygenates in soil and groundwater. The site background and proposed scope of work are presented below.

SITE BACKGROUND

Site Description: This Shell-branded service station is located on the northern corner of the Broadway and Taft Street intersection in Oakland, California (Figures 1 and 2). The area surrounding the site is mixed commercial and residential.

1985 Soil and Groundwater Investigation: In July,1985, EMCON Associates (EMCON) conducted a subsurface investigation. The investigation consisted of advancing two onsite soil borings and converting one boring into groundwater monitoring well S-1. The maximum detection of total petroleum hydrocarbons as gasoline (TPHg) was 3 milligrams per kilogram (mg/kg) in soil boring S-A at 4.0 feet below grade (fbg). Sample locations are shown on Figure 2 and soil sample results are shown in Table 1. Details of the EMCON investigation are presented in the EMCON report dated August 1, 1985.

1992 Product Release and Tank Backfill Well Purging: In December, 1992, Gettler-Ryan of Hayward, California replaced an unleaded pipe fitting reported to have released about 200 gallons of gasoline. Tank backfill well purging was conducted on a daily basis from December 24, 1992

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San Ramon, CA
Sonoma, CA

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through January 7, 1993, at which point the free product that was originally observed in the well was reduced to a sheen. According to Shell records, a total of about 40,000 gallons of mixed water and gasoline were purged from the tank backfill wells.

1993 Soil Sample and Sanitary Sewer Upgrade: Concurrent with purging free product from tank backfill wells, three trenches at the southeast corner of the site were excavated to identify hydrocarbon-impacted areas near sewer piping. Soil samples collected within the trench excavations were collected from 4 to 12 fbg. The highest concentration of TPHg from the sewer trench excavations was 1,300 mg/kg in sample S-J at 4 fbg (Figure 2, Table 1).

The onsite sanitary sewer piping and portions of the offsite sewer piping were replaced with piping resistant to hydrocarbon penetration. Additionally, a horizontal groundwater extraction well was installed within the excavated sewer trench below a section of sewer piping. A grout barrier was also installed in the sewer trench to prevent further offsite migration of residual hydrocarbons. Approximately 126 cubic yards of soil were excavated during sewer upgrade activities. Details of the soil investigation, sewer replacement, grout barrier installation, and horizontal well installation are presented in Weiss Associates' June 18, 1993 report.

1998 Dispenser Upgrade: In March, 1998, Paradiso Mechanical of San Leandro, California upgraded the station by adding secondary containment to the existing dispensers and the turbine pumps. Soil samples, collected below each dispenser, showed field indications of hydrocarbons. Each sample was collected at a depth of approximately 2 fbg. The highest detected TPHg concentration was 990 mg/kg in sample D-4. The highest detected concentration of methyl tertiary butyl ether (MTBE) by EPA Method 8020 was 9.8 mg/kg in sample D-3. The highest detected benzene concentration was 1.8 mg/kg in sample D-4 (Figure 2, Table 1). Details of the dispenser upgrades activities were presented in Cambria's April 9, 1998 *Dispenser Sampling Report.*

Groundwater Depth and Flow Direction: Depth to groundwater has ranged from 0.5 to 4.8 fbg since groundwater monitoring was initiated in January of 1991. The groundwater gradient is generally to the south.

PROPOSED SCOPE OF WORK

To define the lateral and vertical extent of hydrocarbons and fuel oxygenates in soil and groundwater, Cambria proposes advancing 11 Geoprobe soil borings downgradient and adjacent to the dispenser islands and underground storage tanks, along the downgradient edge of the site,

and along the downgradient edge of Taft Street (Figure 3). Placement of these borings is based on the analytical results from previous soil and groundwater investigations performed at the site. Soil borings will be advanced a total depth of 15 fbg to collect a grab groundwater sample from each soil boring before the borehole is grouted to the surface. Soil samples will be collected from each boring at 5-foot intervals for chemical analysis.

Upon Alameda County Health Care Services Agency approval of this work plan, Cambria will complete the following tasks:

Utility Location: Cambria will notify Underground Service Alert (USA) of our drilling activities. USA will have the utilities in the vicinity identified.

Permits: We will obtain necessary permits for soil boring installation and encroachment permits with the City of Oakland for drilling in Taft Street.

Site Health and Safety Plan: We will prepare a comprehensive, site-specific safety plan to protect site workers. The plan will be reviewed and signed by each site worker, and kept onsite during field activities.

Soil Borings and Sampling Activities: Using a Geoprobe rig, Cambria will advance 11 soil borings. Our standard field procedures for Geoprobe sampling are presented as Attachment A. During field activities, we will collect soil samples at 5-foot intervals. We will select soil samples for chemical analysis based on observations of staining and odor and on the results of field screening with a volatile vapor analyzer. Grab groundwater samples will be collected from the borings before they are grouted to the surface.

Laboratory Analyses: Soil and groundwater samples from each boring will be analyzed for TPHg, benzene, toluene, ethylbenzene, xylenes, and MTBE by EPA Method 8260B

Subsurface Investigation Report: After the analytical results are received, Cambria will prepare a report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of drilling and sampling activities;
- Boring logs;
- Tabulated analytical results;
- A figure presenting boring locations;
- Analytical reports and chain-of-custody forms; and
- A discussion of hydrocarbon distribution.

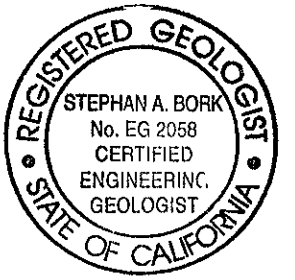
CLOSING

Please call James Loetterle at (510) 420-3336 if you have any questions or comments. Thank you for your assistance.

Sincerely,
Cambria Environmental Technology, Inc.

James Loetterle
Project Geologist

Stephan A. Bork, C.E.G., C.HG.
Associate Hydrogeologist



Figures: 1 - Vicinity/Well Survey Map
2 - Historical Soil Boring and Soil Sample Locations
3 - Proposed Soil Boring Locations

Table: 1 - Soil Analytical Data

Attachment: A - Standard Field Procedures for Geoprobe Sampling

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank CA 91510-7869

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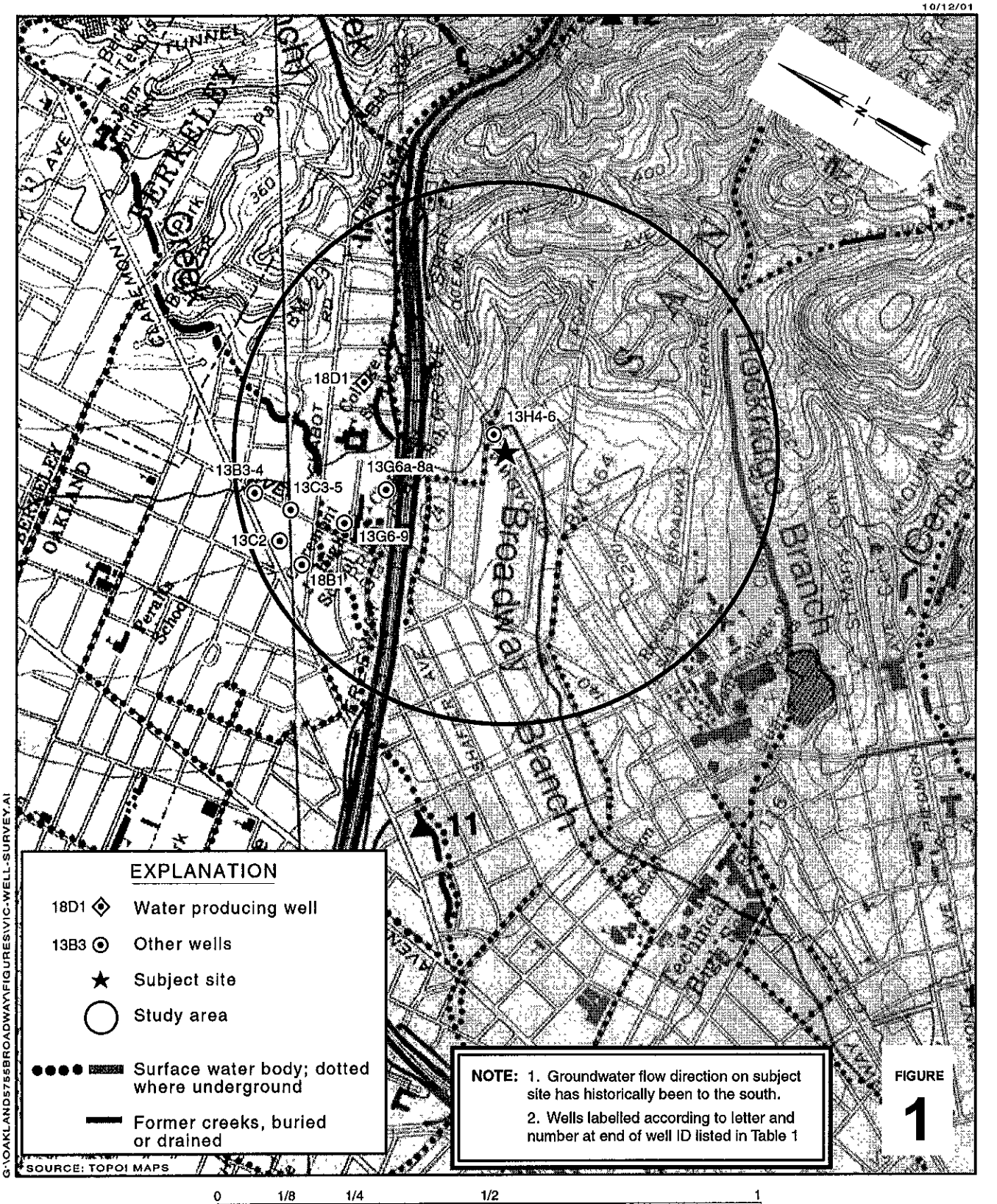

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Shell-branded Service Station

5755 Broadway

Oakland, California

Incident #98995756

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Vicinity / Well Survey Map

(1/2-Mile Radius)

01/21/02

FIGURE 2

Historical Soil Boring and Soil Sample Locations

EXPLANATION

- S-1 — Monitoring well location
- T-1 — Tank backfill well
- T-3 — Pre-pack monitoring well
- S-C — Soil sample location (2/93)
- S-A — Soil boring location (6/85)
- D-2 — Dispenser sample location
- Sanitary Sewer line
- Storm Drain
- Overhead Powerline
- Flow Direction
- Manhole
- 4.5 fbg — Feet below grade
- Limits of excavation (2/93)

Groundwater Flow Direction
(September 7, 1999 to August 31, 2001)

TAFT STREET

BROADWAY

approximate property line

station building

residential

USTs

pumps

water and air

planter

S-1 S-2 S-3 S-A S-C S-E S-F S-G S-H S-I S-J S-K S-L S-M S-N S-O

T-1 T-2 T-3 (Pre-pack 4" monitoring well)

D-2 D-3 D-4

24" deep trench containing 4" SCH 40 PVC pipe

Limits of excavation

Grout barrier

4" SCH 40 PVC vertical access pipe to horizontal well

4" horizontal groundwater extraction well

18" dia.

12" dia.

21" dia.

6.5 fbg

2.2 fbg

2.1 fbg

4 fbg

0.6 fbg

4.8 fbg

8.5 fbg

7 fbg

N

0 15 30

Scale (ft)

Shell-branded Service Station
5755 Broadway
Oakland, California
Incident #98995756

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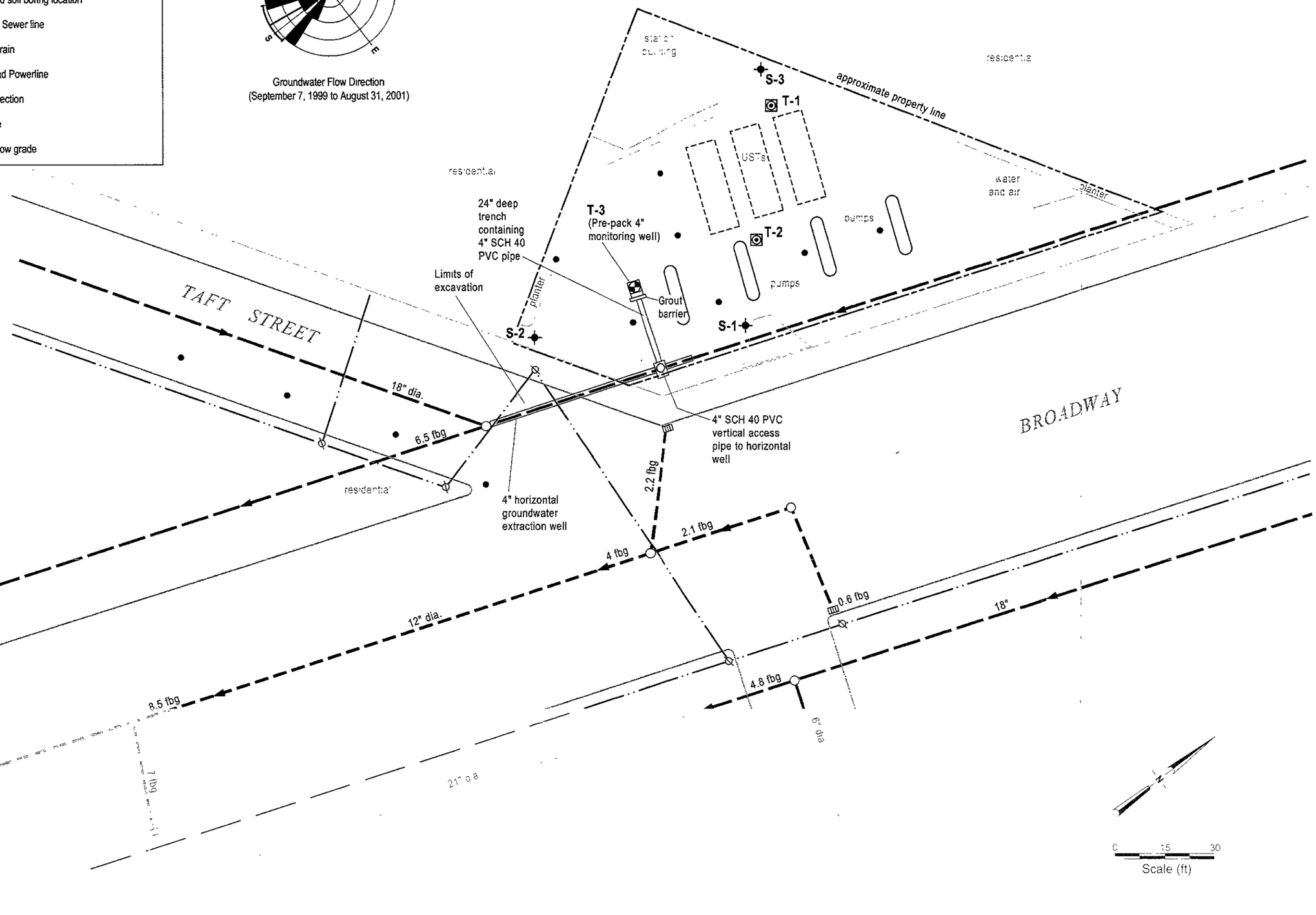
FIGURE 3

Proposed Soil Boring Locations

EXPLANATION

- S-1 — Monitoring well location
- T-1 — Tank backfill well
- T-3 — Pre-pack monitoring well
- Proposed soil boring location
- Sanitary Sewer line
- Storm Drain
- Overhead Powerline
- Flow Direction
- Manhole
- 4.5 fbg — Feet below grade

Groundwater Flow Direction
(September 7, 1999 to August 31, 2001)



N

0 15 30
Scale (ft)

Shell-branded Service Station
5755 Broadway
Oakland, California
Incident #98995756

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Table 1. Soil Analytical Data - Shell Service Station - Incident# 98995756, 5755 Broadway, Oakland, California

Sample ID	Depth (feet)	Date Sampled	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			(Concentrations reported in milligrams per kilogram)					
S-A[a]	4.0	06/11/85	3	--	--	--	--	--
S-A[a]	8.5	06/11/85	2	--	--	--	--	--
S-A[a]	10.0	06/11/85	<2.0	--	--	--	--	--
S-2-1[b]	3.0	09/18/89	92	--	0.12	0.58	0.8	4.2
S-3-1[b]	3.0	09/18/89	<10	--	<0.025	<0.025	0.062	0.12
S-C[c]	1.5	02/04/93	8	--	0.094	0.12	0.0098	1.1
S-E[c]	3.5	02/04/93	150	--	0.9	1.5	2.3	7.7
S-F[c]	5.0	02/04/93	<1	--	0.021	<0.0025	<0.0025	<0.0025
S-G[c]	2.5	02/04/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-H[c]	3.0	02/04/93	<1	--	0.024	<0.0025	<0.0025	<0.0025
S-H[c]	5.0	02/04/93	290	--	0.55	1.8	1.8	6.5
S-H[c]	8.0	02/12/93	2	--	0.074	0.0097	0.0064	0.075
S-H[c]	10.0	02/12/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-H[c]	11.5	02/12/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-I[c]	5.0	02/04/93	2	--	0.074	0.0038	0.095	0.10
S-I[c]	8.0	02/11/93	<1	--	0.011	<0.0025	0.0079	0.013
S-I[c]	10.0	02/11/93	<1	--	0.021	<0.0025	0.011	0.021
S-I[c]	12.0	02/11/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-J[c]	2.0	02/09/93	140	--	0.40	0.71	1.1	4.1
S-J[c]	4.0	02/09/93	1,300	--	1.1	8.1	9.5	44

Table 1. Soil Analytical Data - Shell Service Station - Incident# 98995756, 5755 Broadway, Oakland, California

Sample ID	Depth (feet)	Date Sampled	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			(Concentrations reported in milligrams per kilogram)					
S-K[c]	6.5	02/09/93	**1**	--	**0.35**	**0.31**	**0.23**	**0.64**
S-L[c]	2.0	02/10/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-L[c]	4.0	02/10/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-L[c]	6.0	02/10/93	**320**	--	**0.99**	**1.5**	**2.0**	**5.2**
S-L[c]	7.5	02/11/93	<1	--	**0.039**	**0.0074**	**0.042**	**0.045**
S-L[c]	10.0	02/11/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-L[c]	12.0	02/11/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-M[c]	2.0	02/10/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-M[c]	4.0	02/10/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-M[c]	7.5	02/11/93	<1	--	**0.020**	**0.0072**	**0.028**	**0.053**
S-M[c]	10.0	02/11/93	**5.9**	--	**0.020**	**0.023**	**0.038**	**0.17**
S-M[c]	12.0	02/11/93	<1	--	**0.0026**	**0.0028**	**0.0069**	**0.027**
S-N[c]	2.0	02/10/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-N[c]	4.0	02/10/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-N[c]	7.5	02/10/93	**11**	--	**0.067**	**0.18**	**0.51**	**1.1**
S-N[c]	10.0	02/10/93	<1	--	**0.0035**	**0.0033**	**0.0061**	**0.019**
S-N[c]	12.0	02/10/93	**1.2**	--	<0.0025	<0.0025	<0.0025	**0.025**
S-O[c]	7.5	02/12/93	<1	--	**0.021**	<0.0025	<0.0025	**0.0043**
S-O[c]	10.0	02/12/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
S-O[c]	11.5	02/12/93	**1.3**	--	**0.013**	<0.0025	**0.0046**	**0.032**
S-O[c]	14.0	02/12/93	<1	--	<0.0025	<0.0025	<0.0025	<0.0025
D-2[d]	2.0	03/12/98	**260**	<2.5	**1.7**	<0.50	**3.3**	**5.4**
D-3[d]	2.0	03/12/98	**750**	**9.8**	<0.50	**3.4**	**6.5**	**41**
D-4[d]	2.0	03/12/98	**990**	**25**	**1.8**	**2.3**	**13**	**68**

Table 1. Soil Analytical Data - Shell Service Station - Incident# 98995756, 5755 Broadway, Oakland, California

Sample ID	Depth (feet)	Date Sampled	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			← (Concentrations reported in milligrams per kilogram) →					

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015.
MTBE = Methyl tert-butyl ether by EPA Method 8020.
Benzene, ethylbenzene, toluene, xylenes by EPA Method 8020.
a = Data from August 1, 1985 Emcon Associates report
b = Data from Harding Lawson Associates report
c = Data from June 18, 1993 Weiss Associates report
d = Data from April 9, 1998 Cambria report
--' = Not Analyzed
<x = Below detection limit of x mg/kg

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STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

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

Objectives

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

Soil Classification/Logging

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

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

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

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

Sample Storage, Handling and Transport

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

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Grab Ground Water Sampling

Ground water samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

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

Grouting

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