CAMBRIA

May 26, 1998

Mr. Larry Seto
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Subsurface Investigation Workplan**
Shell Service Station
105 Fifth Street
Oakland, California
WIC #204-5510-0402
Cambria Project #240-0472-5

Dear Mr. Seto:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this workplan to perform a subsurface investigation as requested by the Alameda County Department of Environmental Health (ACDEH) in a December 11, 1997 letter to Shell. A site summary and our proposed scope of work are presented below.

SITE SUMMARY

The site is located at the southwest corner of 5th Street and Oak Street in Oakland, California. The properties surrounding the site are primarily commercial.

Armer/Norman & Associates of Walnut Creek, California (Armer/Norman) performed upgrade activities at the site during November and December of 1996. Five gasoline dispensers, two diesel dispensers, and associated piping were removed and replaced with additional secondary containment. Inactive piping to a former diesel fuel dispenser location was found and removed. On November 27, 1996 Cambria collected soil samples from beneath the seven dispenser locations prior to replacement and beneath the inactive diesel fuel piping. After receiving analytical results indicating the presence of hydrocarbons, Cambria filed an *Underground Storage Tank Unauthorized Release Site Report* with the Alameda County Health Agency.

During February of 1998 Paradiso Mechanical of San Leandro, California (Paradiso) installed secondary containment for the turbine sumps. Since secondary containment had previously been added to the dispensers, no additional dispenser upgrade activities were required at that time. Cambria inspected the tank pit on February 26, 1998 and no field indications of hydrocarbons, such as staining or odor, were observed.

CAMBRIA
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TECHNOLOGY, INC.
1144 65TH STREET,
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OAKLAND,
CA 94608
PH: (510) 420-0700
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PROPOSED SCOPE OF WORK

Objective: To determine the extent of hydrocarbons in soil and ground water beneath the site, we propose installing 3 borings in the assumed down gradient direction from existing dispensers and 2 borings in the assumed up gradient direction from the existing dispensers. Based on topography and the location of the nearby Oakland Inner Harbor, it is anticipated that ground water flows in a southeasterly to southwesterly direction (Figure 1).

Utility Location: Cambria will notify Underground Service Alert (USA) prior to drilling activities to identify any underground utilities that exist near the proposed drilling locations. Cambria will also contract an electro-magnetic line locator to identify any underground piping associated with the service station.

Permits: Cambria will obtain drilling permits from the Alameda County Department of Public Works.

Site Health and Safety Plan: Cambria will prepare a site health and safety plan identifying the potential site hazards associated with the drilling and include a map of the route to the nearest hospital.

Soil Borings: Cambria will drill 5 soil borings using a Geoprobe® (hydraulic push with roto-hammer) to approximately 15 ft below ground surface. We will collect soil samples at five ft intervals, at lithologic changes and from just above the water table. Borings will be completed at 5 ft below the encountered water table. Soil samples will be selected for chemical analysis based on observations of staining and odor and on the results of field screening with a volatile vapor analyzer. Our standard field procedures are presented as Attachment A.

Soil Analysis: Selected soil samples will be analyzed for total purgeable petroleum hydrocarbons as gasoline (TPPH) by modified EPA Method 8015, total extractable petroleum hydrocarbons as diesel by modified EPA Method 8015, benzene, toluene, ethylbenzene, and xylene (BTEX) and methyl tert-butyl ether (MTBE) by EPA Method 8020. Elevated concentrations of MTBE will be verified by EPA Method 8260.

Ground Water Analysis: The grab water samples collected from the borings will be analyzed for TPPH, TEPH, BTEX, and MTBE. Elevated concentrations of MTBE will be verified by EPA Method 8260.

Reporting: Following the field work, we will prepare a subsurface investigation report that will contain:

- A site summary;
- Health and safety plan;
- Descriptions of the drilling, and sampling methods;
- Boring logs;
- Tabulated soil and ground water analytic results;
- Analytic reports and chain-of-custody forms;
- Soil and water disposal methods; and
- Conclusions.

SCHEDULE

Upon receiving written approval of this workplan from the ACDEH, Cambria will obtain necessary permits and schedule field activities. We will submit our investigation report approximately four to six weeks after completing the field work.

CLOSING

We appreciate the opportunity to work with you on this project. If you have any questions or require additional information, please contact us at (510) 420-0700.

Sincerely,
Cambria Environmental Technology, Inc.

Christina Empedocles
Staff Geologist

Diane Lundquist P.E.
Principal Engineer

Attachments: A - Standard Field Procedures for GeoProbe® Sampling

cc: A. E. (Alex) Perez, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553

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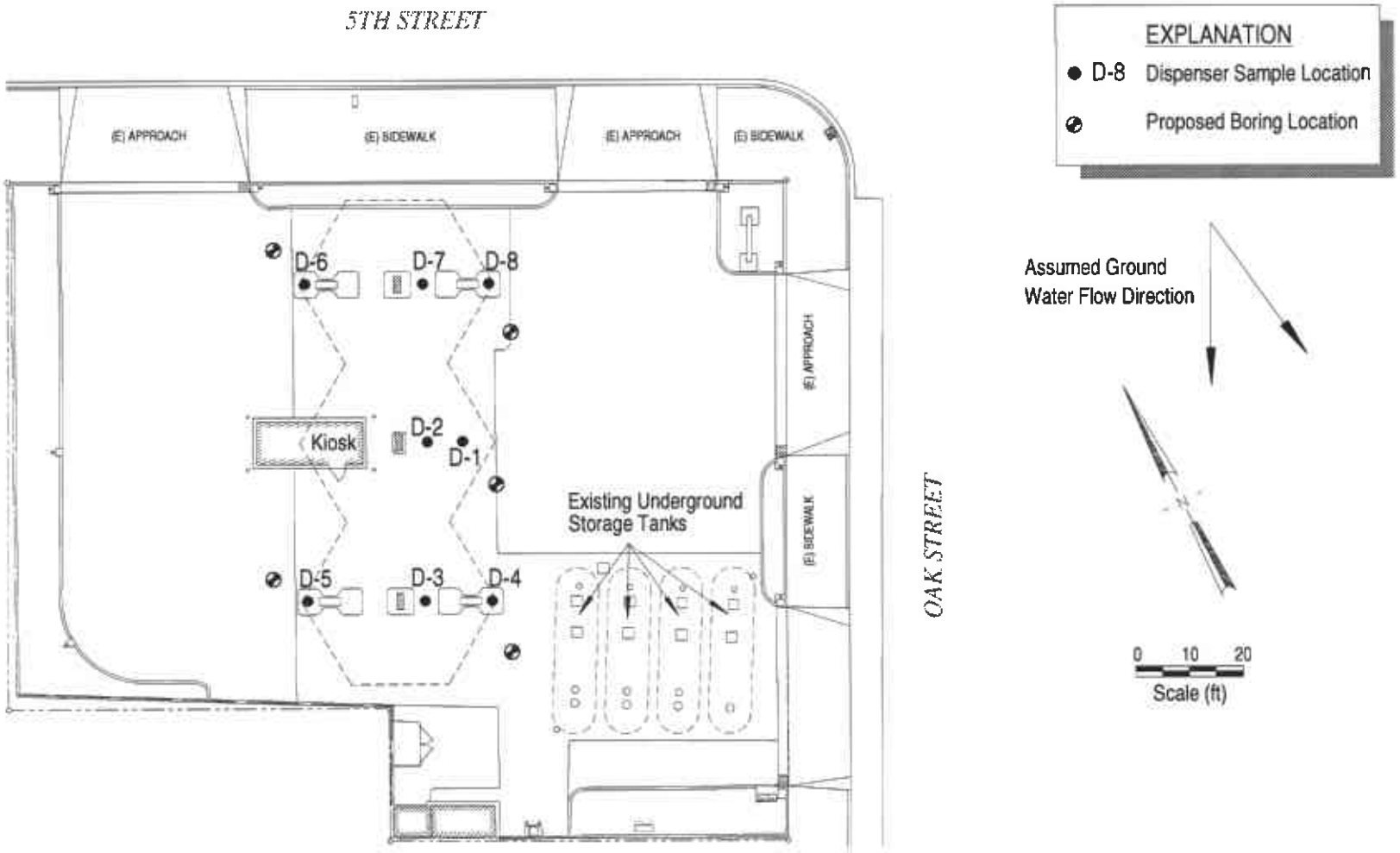

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Proposed Boring Location Map

FIGURE
1

ATTACHMENT A

Standard Field Procedures for GeoProbe® Sampling

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.

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