CAMBRIA

November 8, 1996

Ms. Juliet Shin
Senior Hazardous Materials Specialist
Alameda County Health Services Agency
1131 Harbor Bay Parkway, Room #250
Alameda, California 94502-6577

Re: **Investigation Work Plan**
Former Shell Service Station
2300 Santa Clara Avenue
Alameda, California

Dear Ms. Shin:

As you requested in your September 10, 1996 letter to Mr. R. Jeff Granberry of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) prepared this investigation work plan for the site referenced above. Our objective is to assess whether the Shell station that formerly operated at this location is the source of hydrocarbons detected in well MW-8 immediately down gradient of the site. Our proposed scope of work is presented below.

INVESTIGATION SCOPE OF WORK

Aerial Photograph Review

Since we do not know the configuration of the former Shell site we will attempt to determine the location of the storage tanks and dispensers on the former Shell site by reviewing aerial photographs. If the aerial photographs do not indicate where the tanks and dispensers were located, we will contact the Alameda Fire Department and City of Alameda Building Department to locate building plans or permits that may help us to determine the locations of the former tanks and dispensers. Once we have determined the tank and dispenser locations, we will submit a map showing our recommended drilling locations.

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ENVIRONMENTAL
TECHNOLOGY, INC.
1144 65TH STREET,

Subsurface Investigation

To determine the extent of hydrocarbons in soil and ground water beneath the site, we propose drilling eight to twelve Geoprobe soil borings in and around potential hydrocarbon source areas. We will analyze soil and water samples for total petroleum hydrocarbons as gasoline (TPHg), total lead, and benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tert-butyl ether (MTBE). We will screen soil samples in the field for hydrocarbons using a volatile vapor analyzer and field observations. We will collect water samples from each boring using a peristaltic pump and inert tubing and analyze selected soil and ground water samples from the borings.

Our specific scope of work includes the following tasks:

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

Site Health and Safety Plan: We will prepare a comprehensive site safety plan to protect site workers. The plan will be kept on site at all times and signed by all site workers.

Access Agreements and Permits: We will obtain any necessary permits for the installation of the borings from the County. We will also secure an access agreement with the current property owner to drill the borings and install wells if needed for future monitoring.

Soil Borings: Cambria will drill eight to twelve soil borings collecting soil samples at five foot intervals, at lithologic changes, and from just above the water table. 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. We anticipate analyzing between two and three soil samples per boring. We will also collect ground water samples from each of the borings to assess whether hydrocarbons have impacted ground water. Our standard field procedures are presented as Attachment A.

Chemical Analysis: Both the soil and ground water samples will be analyzed for TPHg by EPA Method 8015, BTEX and MTBE by EPA Method 8020, and total lead by EPA Method 6010. We will confirm MTBE using EPA Method 8260 if MTBE is detected by EPA Method 8020.

Reporting: After we receive the analytic results, we will prepare a subsurface investigation report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of the drilling and soil sampling methods;
- Boring logs;
- Tabulated soil and ground water analytic results;
- Analytic reports and chain-of-custody forms;

- Soil and water disposal methods; and,

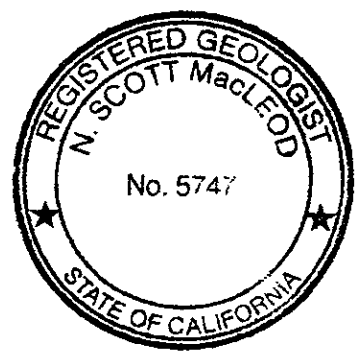
- A discussion of the hydrocarbon distribution in soil and ground water.

Schedule

Upon receiving written approval of our work plan from the County, Cambria will begin negotiating an access agreement with the current property owner and secure drilling permits. Since access agreements can sometimes be difficult to secure, we cannot set a schedule for drilling at this time. We will submit a drilling and reporting schedule to you once we finalize the access agreement.

We appreciate this opportunity to work with you on this case. Please call if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.



N. Scott MacLeod, R.G.
Principal Geologist

Attachments: A - Standard Sampling Procedures

cc: Mr. R. Jeff Granberry, Shell Oil Products Company

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ATTACHMENT A

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings. 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 product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeablily.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

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

Sample 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

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch type sampler or are collected from the open borehole using bailers. 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 collected 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 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.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licenced waste haulers and disposed in secure, licenced facilities based on the composite analytic results.

Ground water removed during sampling and/or rinseate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licenced waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.