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March 25, 1998

Mr. Larry Seto
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

Re: **Well Installation Work Plan**
Former Shell Service Station
2160 Otis Drive
Alameda, California
WIC #204-0072-0502
Cambria Project #24-627-9

Dear Mr. Seto:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this work plan to install one monitoring well at the site referenced above. The installation of the well was requested by the Alameda County Department of Environmental Health (ACDEH) in their February 10, 1998 letter to Shell. A site summary and our proposed scope of work are presented below.

SITE SUMMARY

This former Shell Service Station is located on Otis Drive, between Willow and Park Streets, in Alameda, California, approximately 3,000 feet east of San Francisco Bay. Shell discontinued operation of this service station in September 1997 with the demolition of the station and removal of the underground storage tanks (USTs). Shell is leasing the property and no further action status from your office has been requested prior to returning the site to the property owners.

No further action status was granted for a waste oil tank release by the ACDEH on November 14, 1995 based on the results of more than five years of ground water monitoring. During the ground water monitoring between 1989 and 1995, the depth to ground water at this site varied between 3 and 5 ft with a flow direction of north-northeast. Ground water samples previously collected from former wells MW-1 and MW-2 contained over 6,500 milligrams per liter (mg/L) of total dissolved solids, which exceeds state guidelines for use as a drinking water source.

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Pre-Characterization Sampling: Prior to closing the station, soil samples were collected near the gasoline tanks to precharacterize soils before the tanks were removed. Of the 40 samples analyzed, the maximum benzene concentration found was 0.15 milligrams per kilogram (mg/kg), and no benzene was detected in 35 of the samples. The maximum total purgeable petroleum hydrocarbons as gasoline (TPPH) detected in any of the samples was 46 mg/kg, with no TPPH detected in 30 of the samples. These results indicate limited extent of hydrocarbons in soil near the gasoline tanks.

Tank Removal Sampling: On September 4, 1997, Paradiso Mechanical of San Leandro, California (Paradiso) removed three 10,000-gallon fiberglass gasoline tanks and one 550-gallon fiberglass waste oil tank, as well as associated gasoline product piping, vent piping, and dispensers. Cambria collected soil samples from near the ends of the former gasoline tanks and the waste oil tank. Grab water samples were collected from the gasoline tank and the waste oil tank excavations. Cambria also collected six soil samples from beneath the former dispensers and product piping and one soil sample from beneath each of two former hoists and the former garage oil/water separator. The tank removal and sampling activities were documented in Cambria's October 3, 1997 *Tank Removal and Sampling Report.* Although petroleum hydrocarbons were detected in the grab water samples from the tank pits, no petroleum hydrocarbons were detected in the soil sample from near the waste oil tank pit and low concentrations (no TPPH, maximum 0.11 mg/kg benzene, maximum 0.49 mg/kg methyl tertiary butyl ether (MTBE)) were detected in the soil samples collected around the gasoline tank pit. Maximum concentrations of 270 mg/kg TPPH, 1.7 mg/kg benzene, and 0.32 mg/kg MTBE were detected in shallow soil samples collected beneath the former dispensers.

Geoprobe® Investigation: On December 17, 1997, Cambria collected soil and/or grab water samples from Geoprobe® borings in response to the November 13, 1997 request by the ACDEH. The complete sampling activities and analytical results are documented in Cambria's January 28, 1998 *Investigation Report.* No TPPH, total extractable petroleum hydrocarbons (TEPH), or benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in any of the soil samples from near the former gasoline tanks, waste oil tank, or from the northern corner of the property. One soil sample collected near the gasoline tank pit contained a trace (0.28 mg/kg) concentration of MTBE; no MTBE was detected in the other soil samples. Of the four soil samples collected from the former dispenser areas, only one contained detectable concentrations of TPPH (5.2 mg/kg) or benzene (0.0059 mg/kg). No TPPH, BTEX, or MTBE were detected in the grab ground water sample collected from the northern corner of the site. Maximum concentrations of 2,900 micrograms per liter (μg/L) TPPH, 240 μg/L benzene, and 920 μg/L MTBE were detected in the two grab water samples collected from directly down gradient of the former dispensers and gasoline tanks.

The combined data from the sampling events indicate the presence of a minor amount of gasoline hydrocarbons that is limited to an area of less than 20 ft by 20 ft near the former dispenser islands. There also appears to be a gasoline ground water plume immediately down gradient of the former gasoline tanks and dispensers. Because the hydrocarbon sources have been removed from the site and there are minor amounts

of hydrocarbons left in the soil, the ground water plume should be stable or decreasing through natural attenuation.

PROPOSED SCOPE OF WORK

Objective: As requested by the ACDEH, Cambria will install one ground water monitoring well near the north edge of the property down gradient of the former gasoline tank pit (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 location.

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

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

Soil Boring: Cambria will drill a soil boring using 7" diameter hollow-stem augers. We will collect soil samples at 5 ft intervals and from just above the water table. We will select soil samples for chemical analysis based on observations of staining and odor or 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 TPPH and TEPH by modified EPA Method 8015, and for BTEX and MTBE by EPA Method 8020.

Well Construction: The well will be constructed using 2-inch diameter PVC. Because the ground water depth has historically been as shallow as 3 ft depth, the well will be screened 0.010-inch slot from approximately 3 ft depth to approximately 18 ft depth. The well will be covered with a traffic-rated vault and a locking well cap.

Well Development and Sampling: At least 72 hours after installation, the well will be developed using consecutive episodes of surge block agitation and well evacuation. Evacuation will continue until at least 10 well-casing volumes of water have been removed and the well purge water is as sediment-free as practical. After well development, the well will be purged and sampled using our standard field procedures included as Attachment A.

Ground Water Analysis: The water sample collected from the well will be analyzed for TPHg, TPHd, BTEX, and MTBE using the methods described above. If detected by EPA Method 8020, MTBE will be confirmed using EPA Method 8260.

Reporting: Following well installation and sampling, we will prepare a subsurface investigation report that will contain:

- A summary of the site background and history;
- Descriptions of the drilling, well installation, development and sampling methods;
- Boring log and well construction diagram for the well;
- Tabulated soil and ground water analytical results;
- Analytical reports and chain-of-custody forms;
- Soil and water handling methods; and,
- Hydrogeologic interpretation.

SCHEDULE

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

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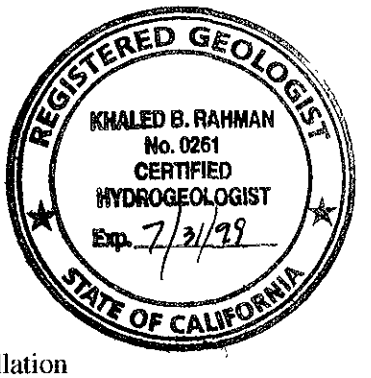
CLOSING

We look forward to continue working with you on this project. Please call if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Paul Waite
Project Engineer

Khaled B. Rahman, R.G., C.H.G.
Senior Geologist



Attachments: A - Standard Field Procedures for Well Installation

cc: A.E. (Alex) Perez, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553
Michael Dosen, Harsch Investment Corp., 523 West Plaza, Alameda, California 94501

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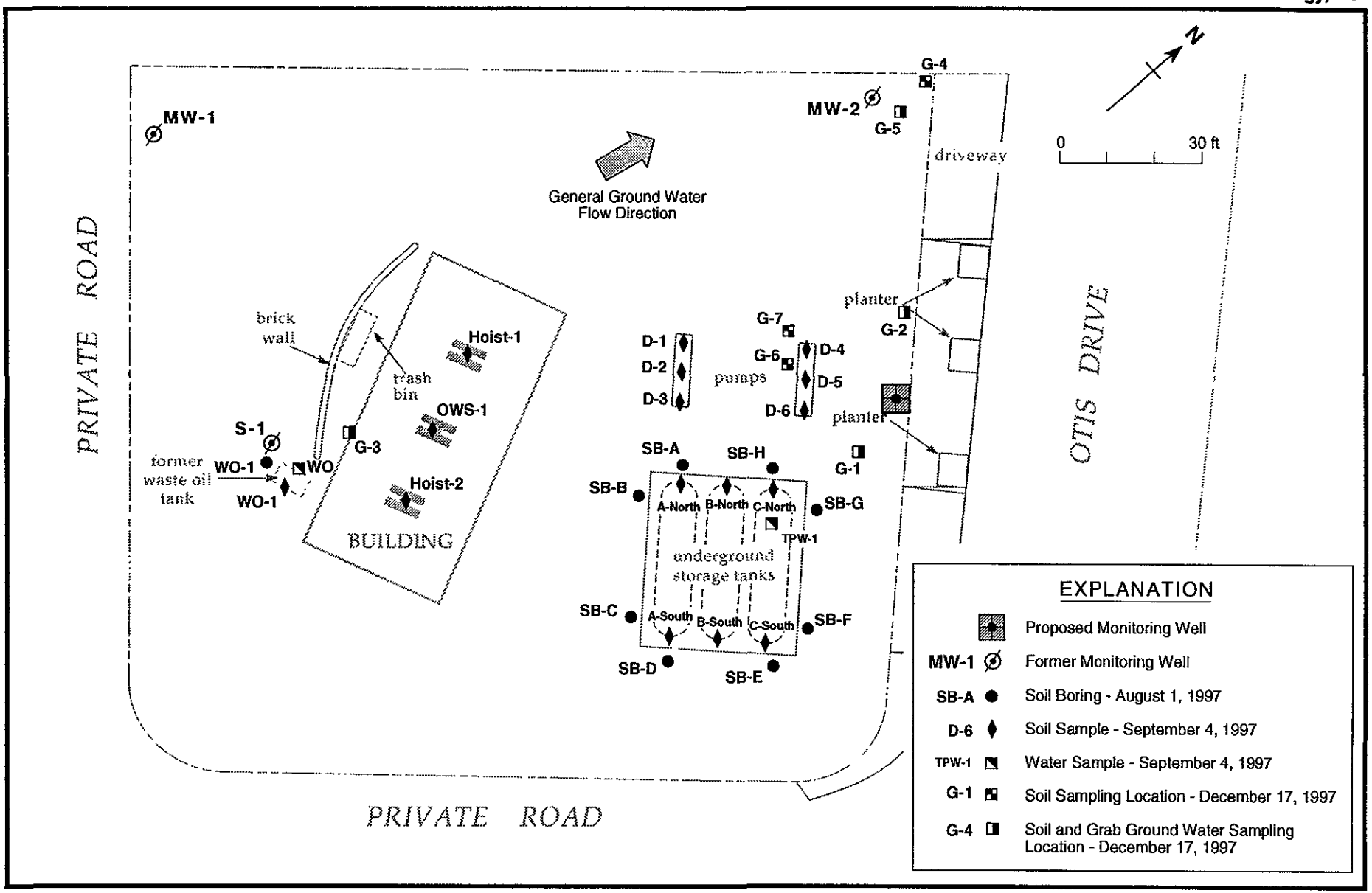

Figure 1. Proposed Monitoring Well Location - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

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ATTACHMENT A

Standard Field Procedures for Well Installation

STANDARD FIELD PROCEDURES FOR MONITORING WELL INSTALLATION

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. 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 at the bottom of the borehole.

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 Analysis

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 volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer 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. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may 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.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Ground water monitoring wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and 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. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

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