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February 25, 2004

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SOLID MEDICAL WASTE MANAGEMENT
COUNTY OF ALAMEDA

Ms. Eva Chu
Alameda County Health Care Services (ACHCSA)
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Investigation Workplan**
Former Chevron Service Station 9-2960
2416 Grove Way
Castro Valley, CA

Dear Ms. Chu:

On behalf of Chevron Environmental Management Company (Chevron), Cambria Environmental Technology, Inc. (Cambria), is submitting this *Investigation Workplan* for the site referenced above. Cambria proposes advancing three soil borings to define the lateral extent of hydrocarbons. One boring will be converted to collect a **soil vapor sample at a depth of 3 feet, near previously detected shallow benzene concentrations.** Cambria will also complete a sensitive receptor survey. The site description, site background, and Cambria's proposed scope of work are presented below.

SITE DESCRIPTION

The site is a former service station with two active monitoring wells, C-7 and C-8. Monitoring well C-7 was removed from the monitoring and sampling program in 2002 because no total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA), ethyl tert-butyl ether (ETBE), di-isopropyl ether (DIPE), and tert-amyl methyl ether (TAME) were detected since sampling began in 1990. Monitoring well C-5 was abandoned in 1997 to allow onsite development. Monitoring wells C-1, C-2, C-3, and extraction well EW-1 were abandoned in 1998 to facilitate the Redwood Road widening project. The property is in a flat lying area that gently slopes to the south (Figure 1). Surrounding site use is commercial and residential. The site, a Trader Joe's parking lot, is located at the corner of Grove Way and Redwood Road in Castro Valley, California (Figure 2).

PREVIOUS INVESTIGATIONS

October 1986 Monitoring Well Installation: In October 1986, EMCON Associates installed groundwater monitoring wells C-1 through C-4. The highest hydrocarbon concentrations in

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groundwater detected were from well C-1 with 120,000 parts per billion (ppb) TPHg and 25,000 ppb benzene, respectively.

Groundwater Monitoring: Gettler-Ryan (GR) began groundwater monitoring in March 1987. In October 1989, C-1 contained 0.91 feet of separate-phase hydrocarbons (SPH). GR began interim recovery of SPH from C-1 in January 1990. Bailing and pumping continued through January 1995. Semi-annual monitoring and sampling was initiated for all wells in January 1997, during the first and third quarters.

August 1990 Monitoring Well Installation: GeoStrategies, Inc. installed offsite wells C-5 through C-7 to delineate the lateral extent of hydrocarbons in groundwater.

Groundwater and Soil Vapor Extraction System: Weiss Associates installed and operated a groundwater and soil vapor extraction system extracting from well EW-1. The system was operated from November 1993 through 1996, and removed approximately 8,900 pounds of petroleum hydrocarbons. In 1997, the systems was shut off and removed with approval from ACHCSA.

1997 Boring Investigation: In February 1997, GR advances borings B-1 through B-6 to investigate soil near former product piping and dispenser island areas. Borings B-1 though B-4 were advanced to a total depth of 16.5 feet below grade (fbg), while B-5 and B-6 were advanced to 19.5 fbg. TPHg and benzene concentrations were detected in the capillary fringe zone, from 15.5 to 18.5 fbg, at a maximum of 2,300 and 13mg/kg, respectively.

Well Abandonment and Destruction: In April 1997, GR abandoned off-site well C-5 to facilitate construction activities. Wells C-1, C-2, C-3, and EW-1 were abandoned in September 1998. Wells C-4 and C-6 have been paved over, and after numerous attempts by GR to recover the wells, these wells are paved over and destroyed.

PROPOSED SCOPE OF WORK

Although the site has been remediated, it is unlikely to meet closure criteria based on the existing data. Therefore, we propose two soil borings, and one soil vapor sample at the locations presented in Figure 2. The borings will confirm current soil and groundwater conditions in the vicinity of the previous source area and destroyed wells. The soil vapor sample will assess indoor air human health risks for residential standards. Cambria will also complete a sensitive receptor survey. Our proposed scope of work is presented below.

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Underground Utility Location: Cambria will contact Underground Service Alert to clear the well locations with utility companies. All three locations will be cleared to 8 fbg using an airknife vacuum truck prior to drilling.

Site Health and Safety Plan: Cambria will prepare a site safety plan to be reviewed and signed by all site workers and to be kept on-site at all times.

Permits: Cambria will obtain well permits from the ACHCSA prior to beginning field operations. A minimum of 48 hours of notice will be given to Alameda County prior to beginning drilling activities. Necessary encroachment permits will be obtained from the City of Castro Valley, including an approved traffic control plan.

Soil Borings: Cambria proposes advancing three soil borings. After clearing to 8 fbg, two of the borings will be advanced to approximately 25 fbg. Soil will be logged and sampled at 5 ft intervals beginning at 10 fbg. At least one grab-groundwater sample will be collected from the two soil borings. The remaining soil boring will be completed to collect a soil vapor sample. Attachment A contains Cambria's Standard Field Procedures for boring and well installation.

Soil Vapor Sample: A soil vapor sample will be collected at approximately 3 fbg. Attachment A contains Cambria's Standard Field Procedures for soil vapor sampling.

Soil Sample Selection: Soil samples will be selected for chemical analyses based on field screening for hydrocarbon vapors using a photo-ionization detector (PID), visual observation of soil characteristics such as discoloration, sample depth relative to the capillary fringe and lithology.

Chemical Analysis: Selected soil samples and all groundwater samples will be analyzed for:

- TPHg by EPA Method 8015,
- Benzene, toluene, ethylbenzene, and xylene (BTEX), fuel oxygenates MTBE, DIPE, TBA, TAME, ETBE, lead scavengers 1, 2-dichloroethane (1,2-DCA) and ethylene dibromide (EDB) by EPA method 8260B.

Reporting: After the analytical results are received, a subsurface investigation report will be prepared containing:

- A summary of the site background and history,
- Descriptions of the drilling and soil sampling methods,
- Boring logs,

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- Tabulated soil and groundwater analytical results,
- A figure illustrating well locations,
- Analytical reports and chain-of-custody forms,
- A discussion of lateral and vertical extent of hydrocarbons in soil and groundwater,
- A discussion of risks to human health and indoor air,
- A discussion of sensitive receptors in the area, and
- Conclusions and recommendations.

SCHEDULE AND CLOSING

Cambria will carry out this scope of work upon receiving written approval from the ACHCSA. We will submit our investigation report approximately four to six weeks after receiving analytical results.

Please contact Bruce Eppler or Sara Giorgi at (916) 630-1855 with any questions or comments regarding the site or this workplan. x103

Sincerely,
Cambria Environmental Technology, Inc.

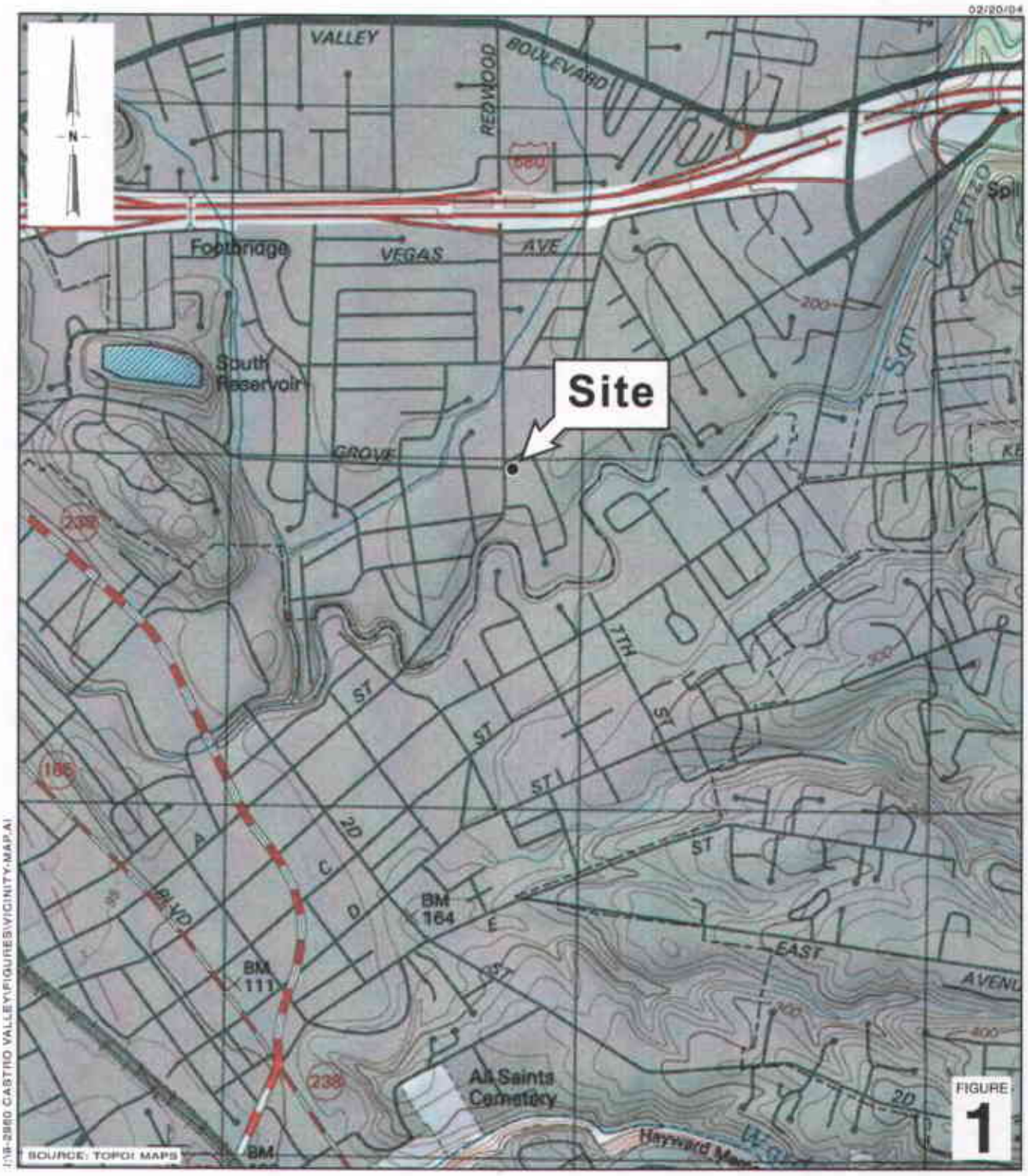
Sara Giorgi
Staff Geologist

N. Scott Macleod, R.G.
Principal Geologist

Figures: 1 – Vicinity Map
2 – Proposed Monitoring Well Locations

Attachments: A – Standard Field Procedures for Boring and Wells

cc: Ms. Karen Streich, Chevron Environmental Management Company, P.O. Box 6012, L4052 San Ramon, CA 94583-0804



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2416 Grove Way

Castro Valley, California

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Vicinity Map

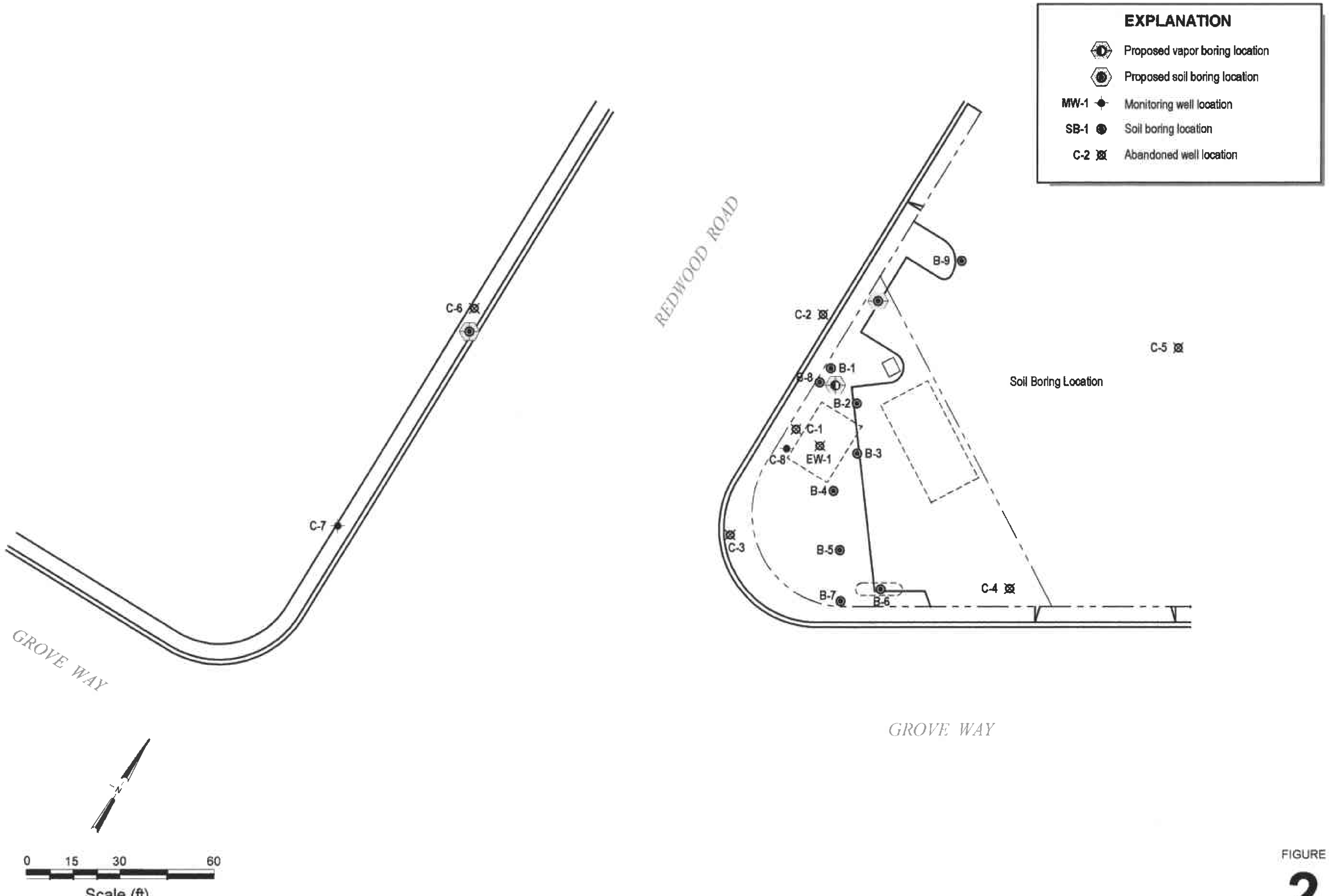

FIGURE
2

Site Plan

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Former Chevron Service Station 9-2960
2416 Grove Way
Castro Valley, California

ATTACHMENT A

Standard Field Procedures for Borings and Wells

STANDARD FIELD PROCEDURES FOR MONITORING WELL INSTALLATION

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

DRILLING AND SAMPLING

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®. Prior to drilling, the first 8 ft of the boring are cleared using an air or water knife and vacuum extraction. This minimizes the potential for impacting utilities.

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 4o 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 groundwater 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 groundwater 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 4oC, 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.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Groundwater monitoring wells are installed to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 fee below and 5 feet 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 feet 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 feet above the well screen. A two feet 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 groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater 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 groundwater are extracted and the sediment volume in the groundwater 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.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater 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 4oC, 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.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles and composited at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples in addition to any analytes required by the receiving disposal facility. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Groundwater removed during development and sampling is typically 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. Upon receipt of analytic results, the water is either pumped out using a vacuum truck for transport to a licensed 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.

Cambria

STANDARD FIELD PROCEDURES SOIL VAPOR SAMPLING

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

Objectives

Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

Direct Push Method for Soil Vapor Sampling

The direct push method for soil vapor sampling uses a hollow vapor probe, which is pushed into the ground, rather than augured, and the stratigraphy forms a vapor seal between the surface and subsurface environments ensuring that the surface and subsurface gases do not mix. Once the desired soil vapor sampling depth has been reached, the field technician installs disposable polyethylene tubing with a threaded adapter that screw into the bottom of the rods. The screw adapter ensures that the vapor sample comes directly from the bottom of the drill rods and does not mix with other vapor from inside the rod or from the ground surface. In addition, hydrated bentonite is placed around the sampling rod and the annulus of the boring to prevent ambient air from entering the boring. The operator then pulls up on the rods and exposes the desired stratigraphy by leaving an expendable drive point at the maximum depth. The required volume of soil vapor is then purged through the polyethylene tubing using a standard vacuum pump. The soil vapor can be sampled for direct injection into a field gas chromatograph, pumped into inert tedlar bags using a "bell jar" sampling device, or allowed to enter a Summa vacuum canister. Once collected, the vapor sample is transported under chain-of-custody to a state-certified laboratory. 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 washed between samples with trisodium phosphate or an equivalent EPA-approved detergent. Once the sampling is completed, the borings are filled to the ground surface with neat cement.

Shallow Soil Vapor Point Method for Soil Vapor Sampling

The shallow soil vapor point method for soil vapor sampling utilizes a hand augur to advance a boring for the installation of a soil vapor sampling point. Once the boring is hand augered to the final depth, a half a foot of number 2/16 filter sand is placed at the base of the boring (Figure A). One, ¼-inch inner-diameter Teflon™ tube of known length is placed into the boring. The tube is fitted with a stainless steel screen and barbed brass fitting to prevent sand from clogging the tube and is capped at the top with another barbed brass fitting. Another half a foot of number 2/16 filter sand is placed above the bottom of the tubing creating a one foot zone of filter sand with the end of the tubing in the middle. A 2-inch layer of unhydrated bentonite chips is placed on top of the filter pack. Next pre-hydrated bentonite gel is then poured into the hole to approximately 0.5 fbg. Another 2-inch layer of unhydrated bentonite chips is placed on top of the bentonite gel. The tube is coiled and placed within a wellbox finished flush to the surface. Soil vapor samples will be collected no sooner than one week after installation of the soil-vapor points to allow adequate time for representative soil vapors to accumulate. Soil vapor sample collection will not be scheduled until after a minimum of three consecutive precipitation-free days and irrigation onsite has ceased. Figure B shows the soil vapor sampling apparatus. A measured volume of air will be purged from the tubing using a hand-held purge pump and a tedlar bag. Immediately after purging, soil-vapor samples will be collected over an approximate 30-minute period using 6-liter Summa canisters and capillary air-flow controllers. The soil-vapor points will be preserved until they are no longer needed for risk evaluation purposes. At that time, they will be destroyed by extracting the tubing, hand augering to remove the sand and bentonite, and backfilling the boring with neat cement. The boring will

be patched with asphalt or concrete, as appropriate.

Vapor Sample Storage, Handling, and Transport

Samples are stored out of direct sunlight in coolers or boxes and transported under chain-of-custody to a state-certified analytic laboratory.