



**Carryl MacLeod**  
Project Manager, Marketing Business Unit

**RECEIVED**

By Alameda County Environmental Health 11:02 am, Jan 12, 2018

Alameda County Health Care Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

Re: Former Standard Oil Station (Chevron 307233)  
2259 First Street  
Livermore, California  
ACEHS Case RO0002908

I accept the *Soil Vapor Investigation Work Plan*.

I agree with the proposed scope of work presented in this document. The information included is accurate to the best of my knowledge, and appears to meet local agency and Regional Board guidelines. This *Soil Vapor Investigation Work Plan* was prepared by GHD Services, Inc., upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Carryl MacLeod  
Project Manager

Attachment: Soil Vapor Investigation Work Plan



December 22, 2017

Reference No. 312264

Ms. Dilan Roe  
Alameda County Environmental Health (ACEH)  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

**Re: Soil Vapor Investigation Work Plan  
Former Standard Oil Station (Chevron 307233)  
2259 First Street, Livermore, California  
ACEH Case No. RO0002908**

Dear Ms. Roe:

GHD is submitting this *Soil Vapor Investigation Work Plan* (work plan) for the former Standard Oil Station referenced above (Figure 1) on behalf of Chevron Environmental Management Company (CEMC). During a meeting with ACEH, the City of Livermore, CEMC, and GHD on November 30, 2017, ACEH requested that additional soil vapor probes be installed to evaluate potential vapor intrusion risk to nearby buildings. A summary of the proposed scope of work is presented below.

## 1. Proposed Scope of Work

GHD proposes to advance one onsite and four offsite soil vapor probes to evaluate vapor intrusion risk. The vapor probes will be installed at the approximate locations discussed during the November 30, 2017 meeting referenced above as shown on Figure 1.

To complete the proposed scope of work, GHD will perform the following tasks.

### 1.1 Site Health and Safety Plan

GHD will prepare a site safety plan to inform site workers of known hazards and to provide health and safety guidance. The plan will be kept onsite at all times during field activities and signed by all site workers and visitors.

### 1.2 Permits and Access Agreements

GHD will obtain necessary permits from Zone 7 and the City of Livermore for soil vapor probe installation.

### 1.3 Underground Utility Location

GHD will notify Underground Service Alert (USA) at least 48 hours prior to field activities to clear the soil boring locations with public utility companies. Additionally, GHD will hire a private utility locator to help



identify all subsurface lines in the work areas prior to beginning work activities. Vapor probe locations may be modified based on the results of the private utility locate.

#### **1.4 Soil Vapor Probes**

Five soil vapor borings (VP-4 through VP-8) will be advanced using a 3-inch diameter hand auger to approximately 5 feet below grade (fbg). Soil encountered in each vapor probe boring will be screened using a photo-ionization detector and logged using American Society for Testing and Materials (ASTM) standard D2488. No soil samples will be collected for soil analysis as previous soil sampling indicates that soil impacts are deep (9 fbg or greater).

Each soil vapor probe will be constructed of 1/4-inch Teflon tubing and fitted with a 1-inch long stainless steel filter screen. The tubing and screen will be placed into each open boring with the middle of the screen interval at approximately 5 fbg. Exact vapor probe depth may be altered based on field observations. The probe will be centered within a 12-inch-thick layer of No. 2/16 sand with approximately 6 inches of dry granulated bentonite emplaced above the sand pack. The remainder of the borehole will be filled with hydrated granular bentonite to 1 fbg and finished to grade with grout. The tubing exiting the grout will be capped with a gas tight valve, permanently labeled, and the top of the probe will be protected by a traffic-rated vault.

#### **1.5 Soil Vapor Probe Sampling**

Soil vapor samples will be collected from newly installed vapor probes VP-4 through VP-8 and existing vapor probe VP-1 no sooner than 72 hours after installation of the vapor probes to allow adequate time for accumulation of representative soil vapor. Soil vapor sample collection will not be scheduled until after a minimum of five consecutive significantly precipitation free days ( $\geq 0.5$  inches of rain). A second sampling event for VP-4 through VP-8 may be conducted pending review of the initial analytical results and discussion with ACEH. The proposed sampling plan is summarized on Table 1.

The samples will be collected using 1-liter SUMMA™ canisters connected to the sampling tubing. Prior to sample collection, stagnant air in the sampling apparatus will be sufficiently removed by purging approximately three probe volumes using a purge canister. The volume of the borehole will generally not be included in the volume calculation as it is assumed that the soil vapor concentrations in the probe and sand pack are equilibrated with the surrounding native soil.

Prior to collecting a soil vapor sample, the initial vacuum of the canister (approximately 30 inches of mercury) will be measured and recorded on the chain-of-custody form (COC). The vacuum of each SUMMA™ canister will be used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 inches of mercury is observed on the vacuum gauge. This is the residual vacuum and this measurement will be recorded on the COC. The purge and sampling flow rates will be limited to less than 200 milliliters per minute to minimize VOC stripping and ambient air intrusion. The SUMMA™ canisters will be labeled and packaged after sampling and sent to a California certified analytical laboratory under COC for analysis. In accordance with the DTSC Advisory Active Soil Gas Investigations



guidance document, leak testing will be performed during sampling using helium and helium concentrations will be recorded.

## **1.6 Laboratory Analyses**

Soil vapor samples will be analyzed for:

- Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method TO 15; and
- Oxygen (O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), nitrogen (N), methane, and helium (He) by ASTM D-1946.

Naphthalene analysis by EPA Method TO-17 is not proposed for this assessment, as it has not been detected during previous soil and soil vapor sampling events and is not considered a constituent of concern at the site. The samples will be analyzed on a standard turnaround time.

## **1.7 Soil Disposal**

Waste generated during soil vapor investigation activities will be stored onsite in labeled DOT approved 55-gallon drums pending analysis and proper disposal at a Chevron and state approved disposal facility.

## **2. Reporting and Schedule**

A report will be prepared summarizing soil vapor investigation activities, soil vapor analytical results, and will include an updated low-threat closure request. Upon receipt of ACEH approval of this work plan, GHD will begin permitting and scheduling work at the site. GHD will provide ACEH an anticipated schedule once coordination is initiated.



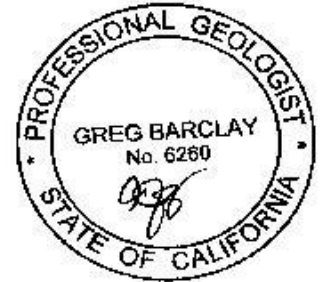
We appreciate working with you on this project. Should you have any questions on the above, please do not hesitate to contact Brian Silva at (530) 387-5713 or Brian.Silva@ghd.com.

Sincerely,

GHD

Brian Silva

Greg Barclay, PG 6260



BAS/cw/2

Encl.

Figure 1      Site Plan

Table 1      Proposed Soil Vapor Samplings Plan

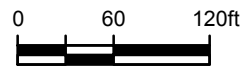
- cc:      Carryl McLeod, Chevron EMC (*electronic only*)  
         Kelly York, Chevron EMC (*electronic only*)  
         Eric Uranaga, City of Livermore Community Development  
         Andrew York, ACEH (*electronic only*)  
         Cheri Sheets, City of Livermore (*electronic only*)  
         Rosy Ehlert, City of Livermore (*electronic only*)  
         Catrina Fobain, City of Livermore (*electronic only*)  
         Bob Clark-Riddell, Pangea Environmental (*electronic only*)  
         Robert Goodman, RJO (*electronic only*)

Figure





Base map modified by drawing from Morrow Surveying. Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date Jun/2015, Accessed: 2017



Coordinate System:  
California State  
Plane Zone 3  
CA83111F



FORMER TEXACO STATION (CHEVRON STATION 307233)  
2259 FIRST STREET  
LIVERMORE, CALIFORNIA

PROPOSED SOIL VAPOR WELLS

312264-2017.2

Dec 21, 2017

FIGURE 1



# Table



**Table 1**  
**Proposed Soil Vapor Sampling Plan**  
Former Standard Oil Service Station 307233  
2259 First Street  
Livermore, California

Vapor Probe	Depth (ft bgs)	Sample Analytical and Number of Sampling Events										
		TO-15					ASTM Method D1946					Sampling Events
		TPHg	Benzene	Toluene	Ethyl Benzene	Xylenes	Oxygen	Carbon Dioxide	Nitrogen	Methane	Helium	
VP-1	5	x	x	x	x	x	x	x	x	x	x	1
	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
VP-2	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
VP-3	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
VP-4 <sup>1</sup>	5	x	x	x	x	x	x	x	x	x	x	1*
VP-5 <sup>1</sup>	5	x	x	x	x	x	x	x	x	x	x	1*
VP-6 <sup>1</sup>	5	x	x	x	x	x	x	x	x	x	x	1*
VP-7 <sup>1</sup>	5	x	x	x	x	x	x	x	x	x	x	1*
VP-8 <sup>1</sup>	5	x	x	x	x	x	x	x	x	x	x	1*
QA/QC	5	x	x	x	x	x	x	x	x	x	x	1*

Explanation  
ft bgs = Feet below ground surface  
TPHg = Total Petroleum Hydrocarbons as Gasoline  
NS = Not proposed for sampling and analysis  
x = Constituent will be analyzed  
<sup>1</sup> = Proposed vapor well  
\* = A second sampling event may be conducted after initial analytical results are reviewed and discussed with ACEH  
QA/QC = Duplicate sample collected from 1 vapor probe during each sampling event.

Note  
No soil samples will be collected from proposed vapor probes VP-4 through VP-8