



Jillian Holloway
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**Chevron Environmental
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August 15, 2014

RECEIVED

By Alameda County Environmental Health at 10:23 am, Aug 20, 2014

Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Unocal No. 5484 (351812)
18950 Lake Chabot Road, Castro Valley, California
ACEH Fuel Leak Case No. RO0000352
GeoTracker Global ID T0600101453

I have reviewed the attached report dated August 15, 2014.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by AECOM, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13257(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,

Jillian Holloway
Project Manager

Attachment: Soil, Groundwater, and Soil Gas Investigation Work Plan by AECOM

August 15, 2014

Keith Nowell
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

**Subject: Soil, Groundwater, and Soil Gas Investigation Work Plan
Unocal No. 5484 (351812)
18950 Lake Chabot Road, Castro Valley, California
ACEH Fuel Leak Case No. RO0000352
GeoTracker Global ID T0600101453**

Dear Mr. Nowell,

On behalf of Chevron Environmental Management Company's (EMC's) affiliate Union Oil Company of California ("Union Oil"), AECOM has prepared a Soil, Groundwater, and Soil Gas Investigation Work Plan (Work Plan) for the Unocal No. 5484 site located at 18950 Lake Chabot Road in Castro Valley, California. The Work Plan was prepared in response to the July 25, 2014 email from Alameda County Environmental Health (ACEH) following meetings between EMC, ACEH, and AECOM on July 22, 2014. An extension request was granted by ACEH on August 13, 2014.

Remarks/Signatures

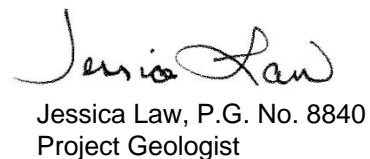
The interpretations in the attached documents represent AECOM's professional opinions which are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

If you have any questions regarding this project, please contact James Harms at (916) 414-5800.

Sincerely,



James Harms
Project Manager



Jessica Law, P.G. No. 8840
Project Geologist



cc: Ms. Jillian Holloway, EMC (via electronic copy)

Attachments

Attachment A Soil, Groundwater, and Soil Gas Investigation Work Plan

Soil, Groundwater, and Soil Gas Investigation Work Plan
 RO 352, Unocal No. 5484 (351812)
 18950 Lake Chabot Rd, Castro Valley, California

Item	Data Gaps	Proposed Investigation	Rationale	Analysis
1	<p><u>July 25, 2014 ACEH Email:</u> Identification of all sensitive receptors identified within 2,000 feet, including foundation types, wells and surface water bodies.</p>	<p>ACPW well search information will be included in the updated site conceptual model (SCM).</p>	<p>NA</p>	<p>None</p>
2	<p><u>July 25, 2014 ACEH Email:</u> Evaluation of depth to water in wells and correlation to vadose zone thickness and the effect of shallow bedrock beneath the site on the depth to groundwater.</p>	<p>The effect of shallow bedrock will be discussed in the updated SCM.</p>	<p>NA</p>	<p>None</p>
3	<p><u>July 25, 2014 ACEH Email:</u> Expanded trend analysis for naphthalene in groundwater monitoring well MW-7 to include all repeated spikes in concentration over time, ranging to 130 micrograms per liter (µg/L) on March 3, 1994, 120 µg/L on March 1, 1995, and 150 µg/L on January 13, 2010. Please include all historical naphthalene concentration data for the concentration trend graph for groundwater monitoring well MW-7.</p>	<p>Expanded MW-7 trend graphs will be included in the updated SCM.</p>	<p>NA</p>	<p>Trend Graphing</p>
4	<p><u>July 25, 2014 ACEH Email:</u> Resume analyzing for diesel in well MW-7 for future groundwater monitoring events.</p>	<p>Future groundwater monitoring will be readdressed following the soil vapor investigation in the updated SCM.</p>	<p>Further groundwater monitoring is not necessary if no wells or surface water bodies are beyond the maximum plume extent from the LTCP Justification Paper plus 1,000 feet.</p>	<p>None</p>

Soil, Groundwater, and Soil Gas Investigation Work Plan
 RO 352, Unocal No. 5484 (351812)
 18950 Lake Chabot Rd, Castro Valley, California

Item	Data Gaps	Proposed Investigation	Rationale	Analysis
5	<p>July 25, 2014 ACEH Email: Naphthalene was not an analyte in the analysis suite for the former waste oil tank. Groundwater concentration of Naphthalene has been observed in well MW-7 indicating the former waste oil tank it is the possible source. The site has potential for vapor intrusion issues due to the shallow groundwater levels (shallowest reported as less than 3 feet below grade surface).</p>	<p>A hand auger will be used to advance two soil borings (Figure 1). The first location will be near the former waste oil tank. The second location will be along the property boundary down gradient from the former waste oil tank. Two soil samples will be collected from each of the borings within the upper five feet and from the interval of five- to 10 feet bgs. The soil borings discussed below in Item 6 will be completed as dual nested soil vapor probes at approximately 5 and 7.5 feet below the ground surface (bgs). Groundwater in the area of the boring locations rises to approximately 6 feet bgs so the probes will be installed 2.5 feet apart which is the minimum recommended separation distance.</p> <p>Each well screen will be a 6-inch-long, 0.25-inch-diameter stainless-steel screen with a pore size of 0.0057 inch (0.14 millimeter). Screens will be connected to a length of 0.25-inch outside diameter (OD) nylon tubing to enable soil vapor sampling at the ground surface. Tubing will be capped at the surface with a Swagelok® valve installed in the closed position to allow equilibration of soil vapor concentrations. A 1-foot-thick Lonestar #2/12 sand pack will be placed from 3 inches above to 3 inches below each vapor probe screen. Above each sand pack, 1 foot of dry granular bentonite will be placed as a transitional seal. Ideally, ≥ 2 feet of semi-hydrated granular bentonite will be placed above the dry granular bentonite. The well will be capped by a concrete surface seal. A traffic-rated, bolt-down vault box will be installed slightly above surrounding grade and finished with a concrete apron to reduce the potential infiltration of surface water, see Figure 2 for probe construction.</p>	<p>In order to evaluate the potential risk associated direct contact and volatilization to outdoor air, AECOM proposes to conduct a soil sampling in the vicinity of and down gradient from the waste oil tank pit.</p> <p>Naphthalene concentrations have been observed in groundwater from well MW-7 indicating the former waste oil tank location is the likely source of naphthalene.</p>	<p>Soil samples will be submitted to a State of California-certified analytical laboratory and analyzed for TPHg, TPHd, and TPHmo using United States Environmental Protection Agency (USEPA) Method 8015M with silica gel cleanup, for BTEX using USEPA Method 8260B and Naphthalene using USEPA Method 8270C. Soil samples will also be submitted for physical analysis including fraction organic carbon, total porosity, dry bulk density (ASTM Method D2937), air and water-filled porosity, and grain size distribution (ASTM Method D422).</p>

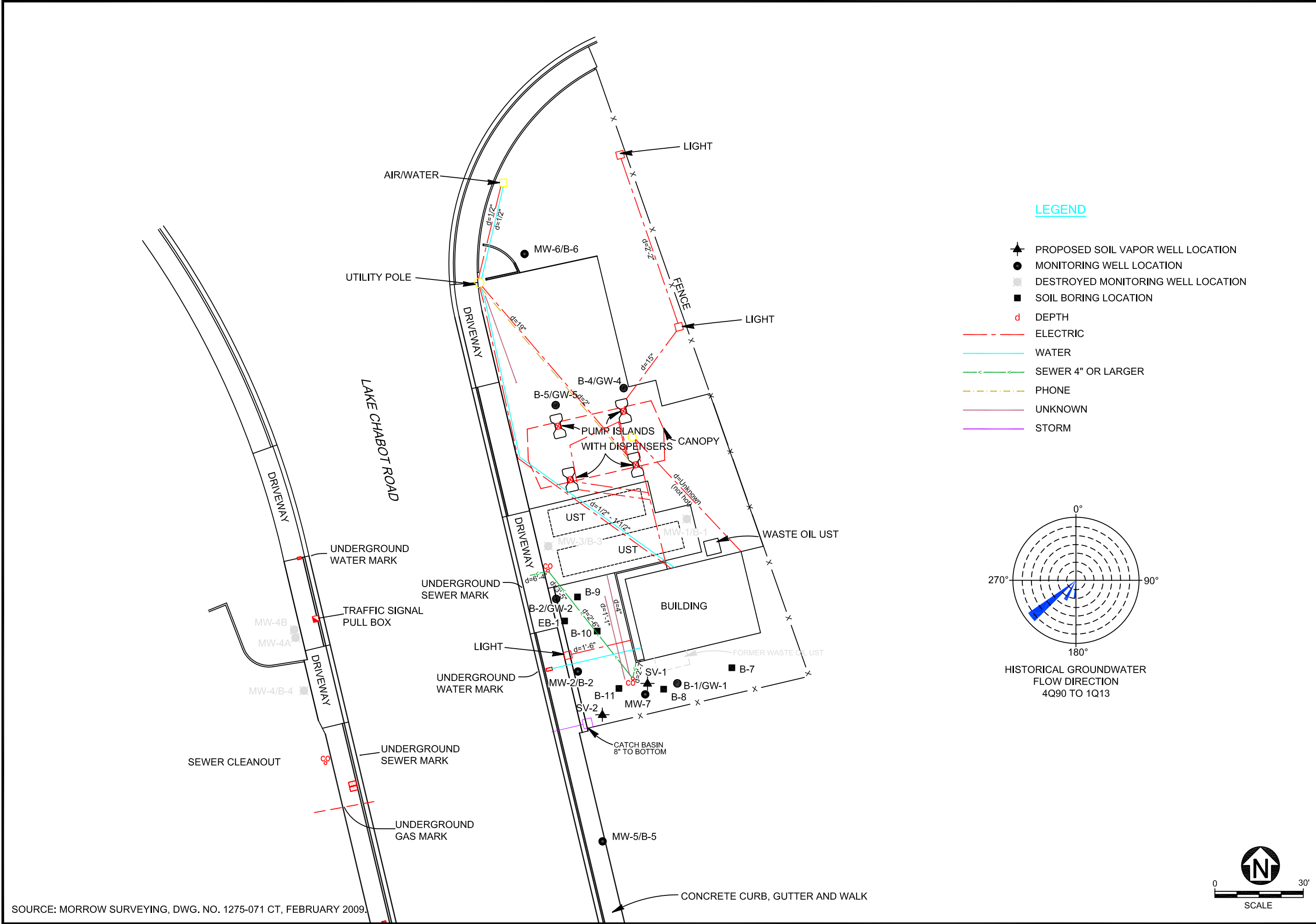
Soil, Groundwater, and Soil Gas Investigation Work Plan
 RO 352, Unocal No. 5484 (351812)
 18950 Lake Chabot Rd, Castro Valley, California

Item	Data Gaps	Proposed Investigation	Rationale	Analysis
6	<p>July 25, 2014 ACEH Email: There is the potential of naphthalene vapor intrusion risk due to shallow groundwater (shallowest reported as less than 3 feet bgs). Due to the uncertainty in depth of the vadose zone, the use of Environmental Screening Levels (ESLs) for groundwater to vapor intrusion are not appropriate (i.e. requires depth to water greater than 10 feet). Therefore, please recover soil gas samples from two on site locations; one near the waste oil tank pit, the suspected source area, and one near the property boundary down gradient of the pit.</p>	<p>The installation of soil vapor sampling wells can introduce ambient air into the vadose zone. An equilibration time is required to account for these effects of soil vapor well installation that may adversely influence sample results. In accordance with DTSC guidelines (2012), and based on a combination of boring techniques, there will be a minimum 48-hour equilibration period between installation and sampling of soil vapor wells. This allows for equilibration of soil vapor concentrations following installation of the soil vapor monitoring wells. AECOM will sample the vapor wells no later than one week, after well construction is completed.</p> <p>The samples will be collected in a stainless steel, gas-tight, opaque Summa™ canister with a passivated, glass-lined internal surface, provided by the analytical laboratory. The sample train will consist of Teflon tubing which has a low low capacity for adsorbing volatile organic compounds (Figure 3).</p> <p>Prior to purging or sampling, a 10 minute shut-in test will be conducted in general accordance with DTSC guidance (DTSC, 2012) to check for leaks in the above-ground sampling system.</p> <p>Leakage of atmospheric air into the sampling equipment during sampling can compromise sample integrity and dilute measured soil vapor hydrocarbon concentrations. Laboratory grade helium is the tracer gas that will be used to test for air leakage into the sampling system for the purpose of sample integrity verification. A sample will be considered valid and acceptable if the concentrations of the tracer gas (helium) is 10% or less.</p>	<p>In order to evaluate the potential risk associated with the vapor intrusion pathway, AECOM proposes to conduct a soil vapor investigation.</p>	<p>Soil vapor samples will be analyzed for TPHg, BTEX, methyl tertiary butyl ether, and naphthalene using USEPA Method (Modified) TO-15 APH Fractions (Sp)-Full list + Naph + APH. Samples will also be analyzed for oxygen, carbon dioxide, helium, nitrogen and methane by ASTM Method D1946 modified.</p>

Soil, Groundwater, and Soil Gas Investigation Work Plan
 RO 352, Unocal No. 5484 (351812)
 18950 Lake Chabot Rd, Castro Valley, California

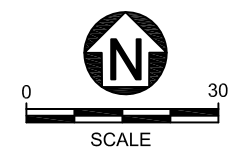
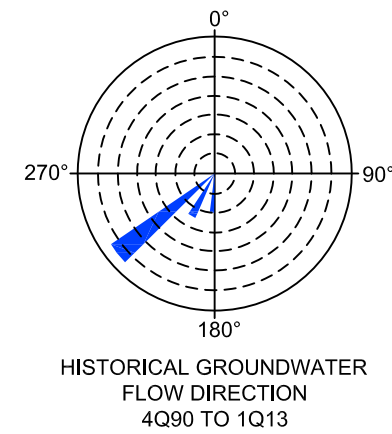
Item	Data Gaps	Proposed Investigation	Rationale	Analysis
6 cont.		<p>Prior to collecting a soil vapor sample, the probes will be purged using a purge canister to ensure that the soil vapor samples collected will be representative of actual soil vapor concentrations. Per DTSC guidance, one purge volume includes the following volumes: the internal volume of tubing; the void space of the sand pack around the probe tip; and the void space of the dry bentonite in the annular space. Field notes containing dimensions and specifications on the aboveground gauges, tubing, sampling equipment, and subsurface tubing will be used to calculate the purge volume. The flow rate for purging will be less than 200 mL/min. For this soil vapor sampling event, three tubing volumes will be purged before sampling. The purge test data (calculated purge volume, purging rate, and duration of purging) will be recorded on field data sheets for each soil vapor sampling point.</p> <p>An equipment blank will be collected at the Site during sampling activities by collecting a sample of clean air or nitrogen through the probe materials before installation in the ground. Analysis of the equipment blank can provide information on the cleanliness of new materials and/or the effectiveness of decontamination procedures used in the field.</p> <p>One duplicate sample will be collected during the sampling event. The duplicate sample will be collected using a splitter located upstream of the flow controller, with separate sampling tubes connecting the splitter to two Summa® canisters. The flow controller will be set such that the flow rate from the sampling probe is less than 200 mL/min. This will double the required sampling time for this vapor well, since two sample canisters are being filled simultaneously.</p>		

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LEGEND

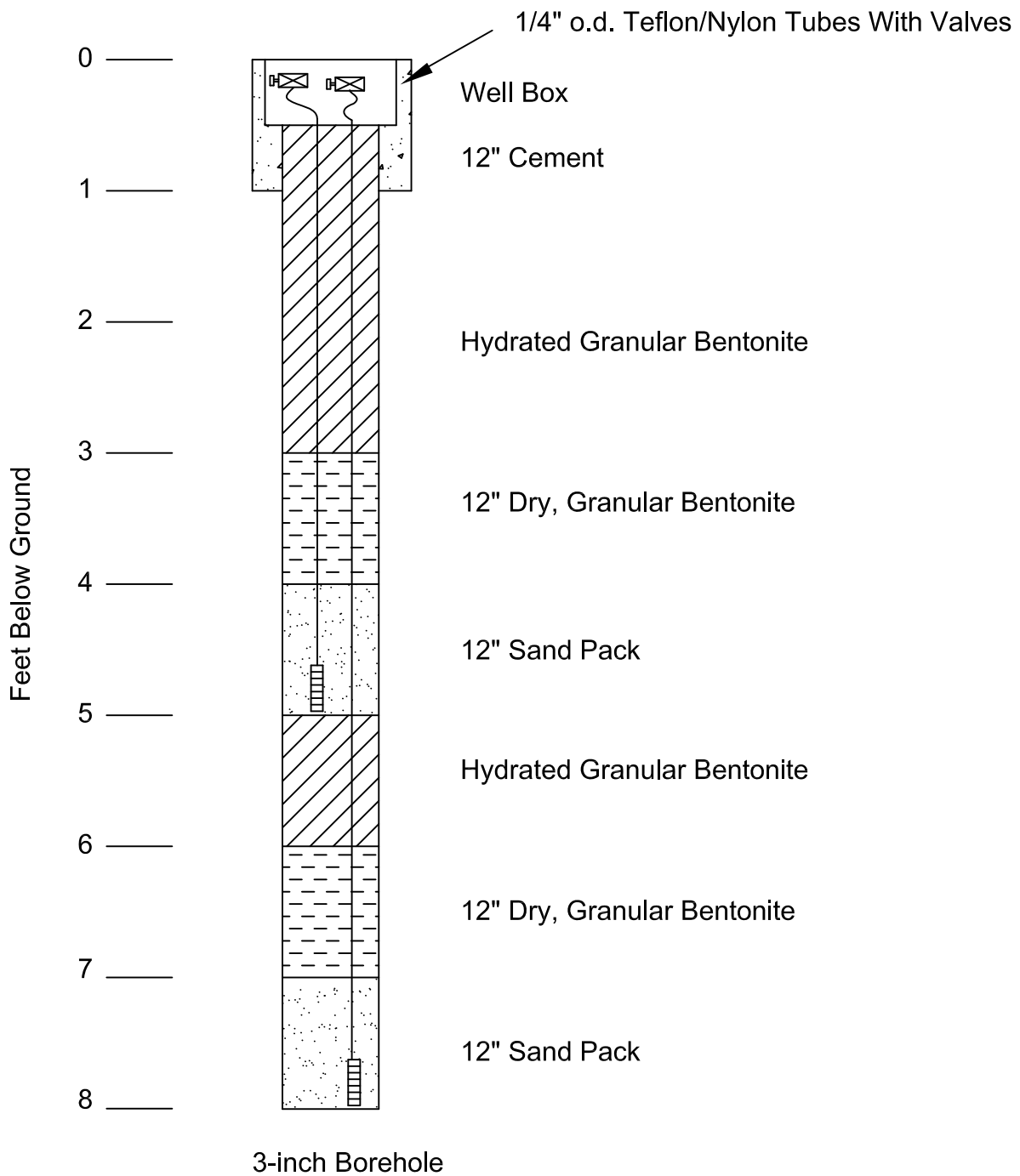
- ▲ PROPOSED SOIL VAPOR WELL LOCATION
- MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- SOIL BORING LOCATION
- d DEPTH
- - - ELECTRIC
- WATER
- - - SEWER 4" OR LARGER
- - - PHONE
- - - UNKNOWN
- STORM



SOURCE: MORROW SURVEYING, DWG. NO. 1275-071 CT, FEBRUARY 2009.

AECOM	
AECOM TECHNICAL SERVICES	
2020 L STREET, SUITE 170 SACRAMENTO, CALIFORNIA 95811 PHONE: (916) 414-5800 FAX: (916) 414-5850 WEB: HTTP://WWW.AECOM.COM	
Proposed Soil Vapor Sample Locations Unocal No. 5484 (351812), RO352 18950 Lake Chabot Road Castro Valley, California	SCALE: 1" = 30' DATE: 08/15/2014 PROJECT NUMBER: 60267030
FIGURE NUMBER: 1	
SHEET NUMBER: 1 of 1	
DESIGNED BY:	REVISIONS:
DRAWN BY: RPR	NO.:
CHECKED BY: RPR	DESCRIPTION:
APPROVED BY: JH	DATE:
	BY:

FILENAME: P:\ENV\01231-Chevron\76Products_transfer_sites\351812_5484_Castro_Valley\7.0 Deliverables\7.2 CADD\Vapor Investigation\Fig2_351812well construction.dwg



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**PROPOSED SOIL VAPOR WELL
 CONSTRUCTION DIAGRAM**

RO352, Unocal No. 5484 (351812)
 18950 Lake Chabot Road
 Castro Valley, California

FIGURE NUMBER:

2

DRAWN BY:

J. Harms

DATE:

08/14/2014

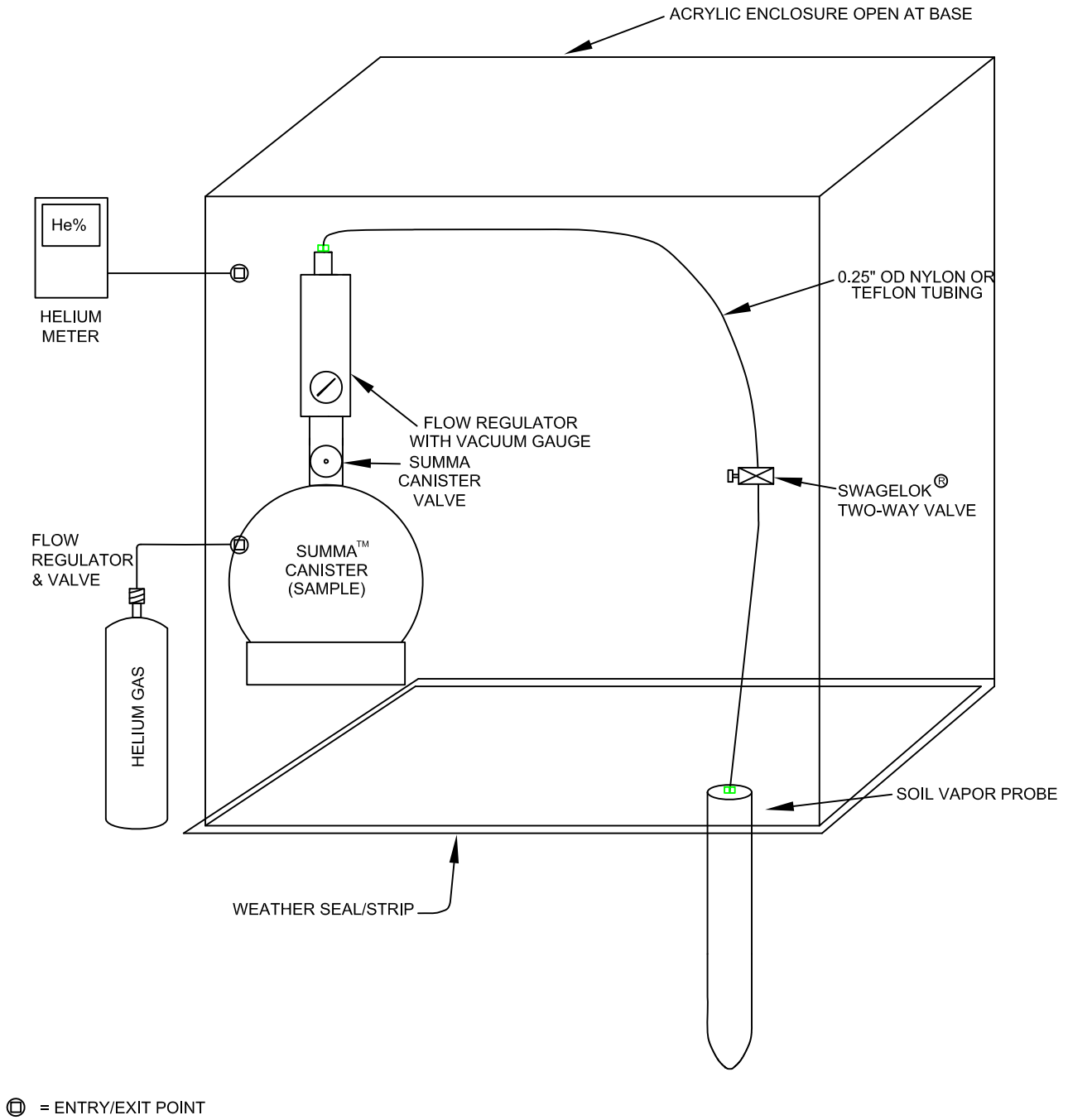
PROJECT NUMBER:

60318102

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P:\ENV\01231-Chevron\76Products_transfer_sites\351812_5484_Castro_Valley\7.0 Deliverables\7.2 CADD\Vapor Investigation\Fig3_351812 SOIL VAPOR SAMPLING APPARATUS.dwg



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SOIL VAPOR SAMPLING APPARATUS

RO352, Unocal No. 5484 (351812)
 18950 Lake Chabot Road
 Castro Valley, California

FIGURE NUMBER:

3

DRAWN BY:

J Harms

DATE:

8/14/2014

PROJECT NUMBER:

60318102

SHEET NUMBER:

1