ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
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August 1, 2013

Shannon Couch (*Sent via E-Mail to: shannon.couch@bp.com*)
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

John Skance (*Sent via E-Mail to: john.skance@bp.com*)
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

Subject: Fuel Leak Case No. RO0000307 and GeoTracker Global ID T06019734265, ARCO #0402/PARKING LOT, 145 Fruitvale Ave, Oakland, CA 94601

Dear Ms. Couch and Mr. Skance:

Alameda County Environmental Health (ACEH) staff has reviewed the case file including the *Revised Work Plan for Monitoring Well Installation and Vapor Intrusion Assessment* (Revised Work Plan), dated May 28, 2013, prepared by Broadbent & Associates, Inc. (Broadbent) on your behalf. The Work Plan supersedes two previously submitted work plans prepared for the site including the *Monitoring Well Installation Work Plan* dated June 19, 2012 prepared by Broadbent, and the *Work Plan – Monitoring Well Installation*, dated June 22, 2006, prepared by AEI Consultants.

ACEH has evaluated the data and recommendations presented in the above-mentioned reports, in conjunction with the case files, and the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy (LTCP). Based on ACEH staff review, we have determined that the site fails to meet the LTCP General Criteria e (Site Conceptual Model), the Media-Specific Criteria for Groundwater, and the Media-Specific Criteria Vapor Intrusion to Indoor Air.

ACEH generally concurs with the proposed scope of work presented in the Revised Work Plan to install monitoring wells and perform a vapor intrusion assessment in order to collect additional data to evaluate residual onsite petroleum hydrocarbon contamination. Therefore, at this juncture ACEH requests that you address the technical comments below and implement the work. Submittal of a revised work plan or work plan addendum is not required unless an alternate scope of work outside that described in the work plan or the technical comments provided below is proposed. Please provide 72-hour advance written notification to this office (e-mail preferred to dilan.roe@acgov.org) prior to the start of field activities.

TECHNICAL COMMENTS

1. **General Criteria e (Site Conceptual Model) –** According to the LTCP, the SCM is a fundamental element of a comprehensive site investigation. The SCM establishes the source and attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants). The SCM is relied upon by practitioners as a guide for investigative design and data collection. All relevant site characteristics identified by the SCM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy.

   ACEH's review of the case files indicates that insufficient data and analysis has been presented to assess the nature, extent, and mobility of the release and to support compliance with the Media Specific Criteria for Groundwater, and the Media Specific Criteria Vapor Intrusion to Indoor Air as described in Items 2, 3 and 4, below.

   Please update the SCM and submit with the Investigation Reports described in Item 5 below, and update with each with each subsequent submittal to identify remaining data gaps and assist in advancing the site to closure in an efficient manner.

2. **Groundwater –** To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites listed in the policy. Our review of the case files indicates that insufficient data and analysis has been presented to support the requisite characteristics of plume stability or plume classification.

   The Revised Work Plan proposes to install onsite groundwater monitoring wells to collect data in order to evaluate current subsurface site conditions and groundwater impacts associated with the historic release. ACEH generally concurs with the proposed scope of work provided the following technical comments are addressed and incorporated into the work and an updated SCM:

   - **Isoconcentration Contour Maps.** The Revised Work Plan presents isoconcentration contour maps for gasoline range organics (GRO) and benzene. ACEH notes that these maps were generated using groundwater monitoring well data collected from wells MW-1 through MW-3 in September 2002 and grab groundwater sample data collected from borings AEI-13 through AEI-22 in June 2002. Use of groundwater data collected from the wells in June 2002 would provide a more accurate depiction of isoconcentration contours in groundwater at that time, and suggest off-site migration of the contaminant plume. Additionally, a review of the historic quarterly groundwater monitoring data collected from wells MW-1 through MW-3 seems to suggest a correlation between higher groundwater contaminant concentrations when the depth to water is shallower. Benzene was detected in samples collected from site wells in 2012 at concentrations of 880 micrograms per liter (µg/L), 930 µg/L, and 2,100 µg/L in wells MW-1, MW-2 and MW-3, respectively, also

indicating more significant offsite migration of the contaminant plume than depicted by the isoconcentration contour maps presented in the Revised Work Plan.

- **Groundwater Gradient.** The Revised Work Plan presents a rose diagram depicting the predominant groundwater gradient direction to the southeast, however states that due to the wells in the historic network being located close together, the accuracy of the former groundwater gradient calculations is unclear. The Revised Work Plan also indicates that direction of the regional groundwater flow in the site vicinity is from east to west and direction and velocity are also influenced by buried stream channels that are typically oriented in an east to west direction. Given the uncertainty in the groundwater gradient direction, ACEH notes that the "upgradient" and "downgradient" designations of the proposed monitoring wells MW-5 through MW-7 provided in the Revised Work Plan are premature and seem to conflict with regional flow direction.

- **Monitoring Well Installation.** The Revised Work Plan proposes to install four new onsite groundwater monitoring wells (MW-4 through MW-7) to replace the three onsite monitoring wells (MW-1 through MW-3) that had been lost or destroyed as a result of property redevelopment activities and to assess current groundwater conditions. Well MW-4 is proposed to be located near the former source area. Wells MW-5 and MW-6 are proposed to be located in the northwest and southwest corners of the property, respectively, to assess "upgradient" conditions. Well MW-7 is proposed to be located in the eastern portion of the property to assess "downgradient" conditions. ACEH generally concurs with the proposed locations of these wells (with the exception of the upgradient/downgradient designations as noted above), however requests an additional pair of wells (see next bullet) be installed in the southwestern portion of the site to monitor the clay/sand unit as well as the deeper gravel unit noted in boring logs MW-1, MW-3 and AEI-19 at approximately 20 to 30 feet bgs and collect sufficient data to define flow direction using triangulation.

- **Monitoring Well Screen Intervals.** The Revised Work plan proposes to install four monitoring wells with screen intervals of 7 to 17 feet if first-encountered groundwater is encountered in clays, or with screen intervals of 20 to 30 feet bgs if first encountered groundwater in encountered in gravels. ACEH generally concurs with the proposed well screen intervals however notes the following:

    - Well MW-2 was screened across the gravelly sand unit from 15 to 30 feet bgs; however wells MW-1 and MW-3 were screened across both the sandy clays from approximately 15 to 21 feet bgs and the gravelly sand unit from approximately 21 to 30 feet bgs (total depth of the boreholes). Thus wells MW-1 and MW-3 potentially provided a conduit for cross contamination of the deeper gravel sand unit from the overlying clay sand units.

    - The gravel unit observed in borings MW-1 and MW-3 was also encountered in the boring AEI-9 located in the vicinity of MW-1 from 20 to 29 feet bgs. This unit suggests a buried stream channel in the vicinity of MW-1, MW-3 and AEI-9.

    - TPH-g was detected in soil samples collected from borings MW-3, GP-6, AEI-11, AEI-17, and AEI-18 at concentrations of 360 milligrams per kilogram (mg/kg) at 16 feet bgs, 190 mg/kg at 15 feet bgs, 210 mg/kg at 15 feet bgs, 290 mg/kg at 20

feet bgs, and 290 mg/kg at 14 feet bgs, respectively. Although free product was not detected during the eight quarterly sampling events, the detected GRO concentrations in the above listed borings may provide indirect evidence of free product in accordance with the 100 to 200 mg/kg "rule of thumb" provided in the SWRCB's 2012 Technical Justification for Vapor Intrusion Media-Specific Criteria document.

- TPH-g and benzene were detected in a grab groundwater sample collected from boring AEI-22 (located in the vicinity of the suspected former UST pit) at concentrations of 25,000 micrograms per liter (µg/L) and 3,800 µg/L, respectively. These concentrations may provide indirect evidence of free product in accordance "rules of thumb" provided in the SWRCB's 2012 Technical Justification for Vapor Intrusion Media-Specific Criteria document (i.e., greater than 20,000 ug/L for GRO and greater than 3,000 ug/L for benzene). A review of the boring log for AEI-22 indicates first encountered was observed groundwater at 19 feet bgs.

- Observations of green staining/color and strong hydrocarbon odors are recorded in multiple bore logs in both the clay and gravel units at depths of up to 30 feet bgs including in a clay unit at 30 feet bgs in boring SB-17 and in the gravel unit in boring MW-2 at 22 feet bgs.

- The Revised Work Plan states that first-encountered groundwater was noted in previous soil borings where gravels were not present, indicating that the clays themselves may represent first-encountered groundwater. ACEH notes that groundwater was observed in a sand layer in boring AEI-14 at approximately 32 feet bgs.

- Boring logs for AEI-15, AEI-16, AEI-17, AEI 18, and AEI-20 indicate first-encountered groundwater at approximately 22 feet bgs, 28 feet bgs, 23 feet bgs, 25 feet bgs, and 21 feet bgs, respectively.

- Depth to water measurements in wells MW-1 through MW-3 collected during the eight quarterly monitoring events conducted at the site between October 2000 and September 2002 ranged from approximately 8 to 18 feet bgs. ACEH notes that due to the long screen intervals, it is not clear whether the historic water levels are representative of potentially confined conditions in the gravel unit at 20 to 30 feet bgs, or water levels in the saturated clays.

- The proposed borings will be advanced during the dry season of a dry year and therefore first water may not be encountered in the clay where contamination has been identified in soil analytical results.

Therefore, due to potential cross contamination of the gravel sand unit due to the overlying clay units as a result of the long screens in the former wells MW-1 and MW-3, indirect evidence of free product in soil and groundwater analytical results, uncertainty in the smear zone interval due to limited depth to water data and lack of information regarding when the release happened, observations of first encountered groundwater in both the clay sand units and the gravel sand units, and the potential that the gravel unit is

not discontinuous but rather indicative of a buried stream channel, ACEH requests that paired wells be installed to monitor both the clay sand units and the gravel units at the site in the proposed locations of MW-4, MW-5 and the additional requested well MW-8.

3. **Soil Sampling –** The Revised Work Plan proposes to advance borings for the new monitoring wells to an approximate total depth of 25 to 35 feet bgs, based on the presence of water, however soil samples for laboratory analysis are proposed to be collected only up to 20 feet bgs. The Work Plan states that sample collection within the proposed interval is justified in order to sample across the entire range of historic groundwater levels to accommodate for free-product smearing that may have historically occurred at the site, at a time when free product may have been present. The Revised Work Plan states that deeper sampling is not warranted because saturated soil samples are more representative of groundwater conditions than soil.

   ACEH notes that data suggests that the smear zone at the site potentially extends to a greater depth as indicated by the items discussed in Technical Comment 2 above. Therefore, in order to expedite vertical delineation of soil contamination at the site, and thus facilitate case closure in a more expeditious manner, ACEH requests that soil samples are collected up to the total depth of 35 feet bgs in each of the proposed/requested borings. Please provide the soil sampling results in the Investigation Report described in Item 5 below and correlate the results of soil data collected in the saturated zone with groundwater analytical results in the updated the SCM.

4. **Vapor Intrusion to Indoor Air –** The LTCP describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to human occupants of existing or future site buildings, and adjacent parcels. Appendices 1 through 4 of the LTCP criteria illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario. Our review of the case files indicates that the site data and analysis fail to support the requisite characteristics of one of the four scenarios.

   The Revised Work Plan proposes to install soil vapor probes and conduct a survey of the existing site building to collect data in order to evaluate the presence and extent of residual hydrocarbon impacts in soil vapor and assess the risk to potential onsite and offsite receptors. ACEH generally concurs with the proposed scope of work provided the following technical comments are addressed and incorporated into the work and the updated SCM:

   - **Site Building Survey.** ACEH understands the site is currently occupied by the Fruitvale Commercial Center office building located on the northeast corner of Farnam Street and Fruitvale Avenue. According to a 2002 report prepared by AEI, the existing three-story building has a slab-on-grade foundation with no basement and has a vapor barrier beneath the slab. The first floor is occupied by a restaurant and Laundromat, the second floor by a health and dental clinic, and the third floor by a tax preparation service and real estate mortgage company. Open space areas west and east of the commercial building are concrete covered parking lots with narrow landscape planter strips along the western and southern edges of the property.

     The Revised Work Plan proposes to conduct a survey of the site building including reviewing available building plans, foundation characteristics, floor integrity, and

building ventilation characteristics, to determine any vapor intrusion risk associated with potential residual hydrocarbons in soil vapor. ACEH recommends that the survey include obtaining information on the vapor barrier reportedly installed beneath the site building and any associated sub-slab ventilation system features and sampling ports (vent risers, etc.). Additionally, ACEH recommends that the proposed survey also include obtaining information on the foundation characteristics of the adjacent residential properties in order to determine the appropriate screen interval of the soil vapor probes to satisfy the LTCP criteria (i.e., a minimum of 5 vertical feet below the base of existing foundations).

- **Probes Depths.** The Revised Work Plan proposes to install companion soil vapor probes (referred to as "A" and "B" probes) in three onsite locations with screen intervals of 3 to 3.5 feet and 5 to 5.5 feet bgs, respectively. The stated rational for the two proposed depth intervals is to assess the potential bioattenuation of residual hydrocarbons in soil vapor. ACEH notes that Scenario 4 (Direct Measurement of Soil Gas Concentrations) of the Media Specific Criteria for Vapor Intrusion to Indoor Air only requires direct measurement of soil gas at one depth interval (i.e., at a minimum depth of 5 vertical feet below the foundation of existing buildings). The appropriate soil gas screening levels are then determined based on whether the site meets the bioattenuation zone characteristics as defined by the LTCP (i.e., TPH concentrations in soil less than 100 mg/kg, measured in at least two depths within the five-foot zone, and soil gas oxygen concentrations at the bottom of the five-foot bioattenuation zone. Additionally, ACEH notes that DTSC soil gas investigation guidance cautions that soil gas samples collected at less than 5 feet bgs may be subject to barometric pressure effects and prone to breakthrough of ambient air through the soil column. Therefore, ACEH recommends that the proposed "B" probes be replaced with additional "A" probes to ensure collection of useful data to evaluate vapor intrusion to indoor air as described below.

- **Probe Locations.** The Revised Work Plan proposes to install three sets of soil vapor probes including probes SG-1A/SG-1B in front of the existing building to quantify risks to potential future building occupants, and soil vapor probes SG-2A/SG-2B and SG-3A/SG-3B on the northeast and southeast corners of the property, respectively, to evaluate risks to residences to the east of the property. The paired probes are proposed to be separated by a horizontal distance of at least three feet at each location.

  ACEH recommends that the rather than installing the soil vapor pairs at two depth intervals as discussed above, the "B" soil vapor probes be replaced with equivalent "A" probes and located so as to collect additional data on source areas and the spatial distribution of contamination and thereby provide multiple data points for assessment of vapor intrusion to indoor air. This recommendation is consistent with DTSC soil gas investigation guidance which states that soil gas samples collected immediately above the source of contamination are more likely to be representative of what may be in contact with the building's foundation. While ACEH generally concurs that the location of the proposed "A" probes seems appropriate for assessing the exposure of occupants of the existing site building and residents of property to the east of the site, ACEH notes that further delineation of the groundwater contaminant plume and gradient direction through the installation of groundwater

monitoring wells may result in the identification of additional receptors that are also potentially at risk from vapor intrusion to indoor air (i.e., occupants of the commercial facilities to the north, west and south of the site).

- **Laboratory Analysis of Soil Gas Samples.** The Revised Work Plan proposes to analyze soil gas samples for gasoline range organics (GRO), benzene, toluene, ethylbenzene, xylenes, naphthalene, and methyl tertiary butyl ether. Please address the following comments and ensure that soil gas sample collection, and sample handling and transport methods are in accordance with the DTSC Active Soil Gas Investigation Advisory and that soil analytical methods are selected to achieve reporting limits that are below the appropriate screening levels.

    - The LUFT Manual does not recommend TPH analysis for soil vapor unless a site-specific evaluation of the vapor intrusion pathway is required. If ARCO is planning on preparing a human health risk assessment for the site, then the LUFT Manual recommends use of EPA Methods 8260B, TO-15, and/or TO-17 as these methods provide for mass spectrometry identification, unlike the proposed Method TO-3 which uses gas chromatography/flame ionization detector (GC-FID) methods and cannot provide for compound identification. Additionally, the LUFT Manual recommends requesting "tentatively identified compounds" (TICs) to be quantified.

    - Please note that if TO-15 is used for naphthalene analysis as proposed, the recommendations within Appendix E of the 2012 DTSC Active Soil Gas Investigation Advisory must be followed including laboratory procedures for naphthalene recovery, naphthalene carryover, canister cleanliness, canister age, matrix spikes and matrix spike duplicates, and use of TO-17 to confirm TO-15 sampling results.

    - Please ensure that quality control/quality assurance (QA/QC) sample blanks (method, trip, material, and equipment blanks) and field duplicates are collected and/or included in shipping containers in accordance with the Department of Toxic Substances Control's Active Soil Gas Investigations Advisory.

- **Field Conditions.** The Revised Work Plan states that soil vapor sampling will not be performed during or immediately after a rainfall event of 0.5 inches or more, and if a rainfall event of this magnitude occurs within 24 hours of the scheduled soil vapor sampling activities, the field work will be rescheduled. In accordance with DTSC guidance, please also ensure that irrigation or watering of soil within the landscape planter strips along the western and southern edges of the property is stopped at least five days prior to the soil gas sampling event, and that frontal systems have passed the area to help ensure that atmospheric air is not introduced into the shallow vadose zone due to barometric pressure fluctuations.

- **Temporal and Seasonal Variations**. Consistent with DTSC guidance, ACEH requires collection of soil gas to assess temporal and seasonal variations in soil gas concentrations. Please collect soil gas samples in the fall of 2013 and spring of 2014.

Please submit the results of the soil gas investigation in a Vapor Intrusion Assessment Report described in Technical Comment 5 below.

5. **Investigation Report and Updated Site Conceptual Model**. The Revised Work Plan proposes to submit a Monitoring Well Installation and Initial Quarterly Sampling Event Report and a Vapor Intrusion Assessment Report documenting the results of the soil, groundwater, and soil vapor investigation activities. Please submit the reports in accordance with the schedule provided in the Technical Work/Report Section below. The reports should include at a minimum a description of field operations, analytical methods used, deviations from the approved work plan, data inconsistencies, QA/QC procedures, analytical results, data validation, analysis and updated SCM based on data obtained from the soil, groundwater, and soil gas investigation, data gaps identified based on the updated SCM, and conclusions and recommendations.

   Additionally, please include tables and diagrams including a site plan and sample location maps, building construction details, plume maps and geologic cross sections with isoconcentration contours displaying the limits of contamination, boring logs, construction and as-built diagrams for groundwater monitoring wells and soil gas wells, summary tables for soil, groundwater, and soil gas analytical data, legible copies of field and laboratory notes or logs, analytical results and QA/QC information including tables and explanation of procedures, results, corrective actions and effect on the data, and raw data including chromatograms and calibration data. If data from previous investigations is included, please provide in a way that distinguishes them from the current investigation.

   In order to expedite review, ACEH requests the updated SCM be presented in a tabular format that highlights the major SCM elements and associated data gaps which need to be addressed to progress the site to case closure under the LTCP. Please see Attachment A "Site Conceptual Model Requisite Elements".

TECHNICAL WORK/REPORT REQUEST

Please perform the requested work and submit technical reports to Alameda County Environmental Health Department (Attention: Dilan Roe) in accordance with Attachment 1 and the schedule below.

- **October 15, 2013** – Groundwater Monitoring Well and Soil Vapor Probe Installation

- **January 17, 2014** – Monitoring Well Installation and Initial Quarterly Sampling Event Report
  File to be named: RO_307_SWI_R_yyyy-mm-dd

- **January 17, 2014** – Vapor Intrusion Assessment and Initial Sampling Event Report
  File to be named: RO_307_SWI_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. Title 23 of the California Code of Regulations, Sections 2652 through 2654, and 2721

through 2798 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance.

Please call me at (510) 567-6767 or send me an electronic mail message at dilan.roe@acgov.org to schedule the teleconference call.

Sincerely,

Digitally signed by Dilan Roe
DN: cn=Dilan Roe,
o=Environmental Health, ou=LOP,
email=dilan.roe@acgov.org, c=US
Date: 2013.08.01 19:09:43 -07'00'

Dilan Roe, P.E.
LOP Program Manager

cc:
Chuck Carmel, Atlantic Richfield Company (*Sent via E-mail to: charles.carmel@bp.com*)
Kristene Tidwell, Broadbent & Associates, Inc. (*Sent via E-mail to: Ktidwell@broadbentinc.com*)

Dilan Roe, ACEH (*Sent via E-mail to: dilan.roe@acgov.org*)
GeoTracker, file

ATTACHMENT 1

Responsible Party(ies) Legal Requirements/Obligations & ACEH Electronic Report Upload (ftp) Instructions

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements. (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/)

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 7835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	**REVISION DATE:** July 25, 2012
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (petroleum UST and SCP) require submission of all reports in electronic form to the county's FTP site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single Portable Document Format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to .loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to .loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ATTACHMENT A

Site Conceptual Model Requisite Elements

ATTACHMENT A

Site Conceptual Model

The site conceptual model (SCM) is an essential decision-making and communication tool for all interested parties during the site characterization, remediation planning and implementation, and closure process. A SCM is a set of working hypotheses pertaining to all aspects of the contaminant release, including site geology, hydrogeology, release history, residual and dissolved contamination, attenuation mechanisms, pathways to nearby receptors, and likely magnitude of potential impacts to receptors.

The SCM is initially used to characterize the site and identify data gaps. As the investigation proceeds and the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened until it is said to be "validated". At this point, the focus of the SCM shifts from site characterization towards remedial technology evaluation and selection, and later remedy optimization, and forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 2 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

The SCM should incorporate, but is not limited to, the topics listed below. Please support the SCM with the use of large-scaled maps and graphics, tables, and conceptual diagrams to illustrate key points. Please include an extended site map(s) utilizing an aerial photographic base map with sufficient resolution to show the facility, delineation of streets and property boundaries within the adjacent neighborhood, downgradient irrigation wells, and proposed locations of transects, monitoring wells, and soil vapor probes.

a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.

b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.

c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes). Include local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.).

d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.

e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.

f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.

g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).

h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).

i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate.

j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

TABLE 1

INITIAL SITE CONCEPTUAL MODEL

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	The site is in the northwest portion of the Livermore Valley, which consists of a structural trough within the Diablo Range and contains the Livermore Valley Groundwater Basin (referred to as "the Basin") (DWR, 2006). Several faults traverse the Basin, which act as barriers to groundwater flow, as evidenced by large differences in water levels between the upgradient and downgradient sides of these faults (DWR, 2006). The Basin is divided into 12 groundwater basins, which are defined by faults and non-water-bearing geologic units (DWR, 1974). The hydrogeology of the Basin consists of a thick sequence of fresh-water-bearing continental deposits from alluvial fans, outwash plains, and lacustrine environments to up to approximately 5,000 feet bgs (DWR, 2006). Three defined fresh-water bearing geologic units exist within the Basin: Holocene Valley Fill (up to approximately 400 feet bgs in the central portion of the Basin), the Plio-Pleistocene Livermore Formation (generally between approximately 400 and 4,000 feet bgs in the central portion of the Basin), and the Pliocene Tassajara Formation (generally between approximately 250 and 5,000 or more feet bgs) (DWR, 1974). The Valley Fill units in the western portion of the Basin are capped by up to 40 feet of clay (DWR, 2006).	None	NA
	Site	***Geology:*** Borings advanced at the site indicate that subsurface materials consist primarily of finer-grained deposits (clay, sandy clay, silt and sandy silt) with interbedded sand lenses to 20 feet below ground surface (bgs), the approximate depth to which these borings were advanced. The documented lithology for one on-site boring that was logged to approximately 45 feet bgs indicates that beyond approximately 20 feet bgs, fine-grained soils are present to approximately 45 feet bgs. A cone penetrometer technology test indicated the presence of sandier lenses from approximately 45 to 58 feet bgs and even coarser materials (interbedded with finer-grained materials) from approximately 58 feet to 75 feet bgs, the total depth drilled. The lithology documented at the site is similar to that reported at other nearby sites, specifically the Montgomery Ward site (7575 Dublin Boulevard), the Quest laboratory site (6511 Golden Gate Drive), the Shell-branded Service Station site (11989 Dublin Boulevard), and the Chevron site (7007 San Ramon Road). ***Hydrogeology:*** Shallow groundwater has been encountered at depths of approximately 9 to 15 feet bgs. The hydraulic gradient and groundwater flow direction have not been specifically evaluated at the site.	As noted, most borings at the site have been advanced to approximately 20 feet bgs, and one boring has been advanced and logged to 45 feet bgs; CPT data was collected to 75 feet bgs at one location. Lithologic data will be obtained from additional borings that will be advanced on site to further the understanding of the subsurface, especially with respect to deeper lithology. The on-site shallow groundwater horizontal gradient has not been confirmed. Additionally, it is not known if there may be a vertical component to the hydraulic gradient.	Two direct push borings and four multi-port wells will be advanced to depth (up to approximately 75 feet bgs) and soil lithology will be logged. See items 4 and 5 on Table 2. Shallow and deeper groundwater monitoring wells will be installed to provide information on lateral and vertical gradients. See Items 2 and 5 on Table 2.
Surface Water Bodies		The closest surface water bodies are culverted creeks. Martin Canyon Creek flows from a gully west of the site, enters a culvert north of the site, and then bends to the south, passing approximately 1,000 feet east of the site before flowing into the Alamo Canal. Dublin Creek flows from a gully west of the site, enters a culvert approximately 750 feet south of the site, and then joins Martin Canyon Creek approximately 750 feet southeast of the site.	None	NA
Nearby Wells		The State Water Resources Control Board's GeoTracker GAMA website includes information regarding the approximate locations of water supply wells in California. In the vicinity of the site, the closest water supply wells presented on this website are depicted approximately 2 miles southeast of the site; the locations shown are approximate (within 1 mile of actual location for California Department of Public Health supply wells and 0.5 mile for other supply wells). No water-producing wells were identified within 1/4 mile of the site in the well survey conducted for the Quest Laboratory site (6511 Golden Gate Drive; documented in 2009); information documented in a 2005 report for the Chevron site at 7007 San Ramon Road indicates that a water-producing well may exist within 1/2 mile of the site.	A formal well survey is needed to identify water-producing, monitoring, cathodic protection, and dewatering wells.	Obtain data regarding nearby, permitted wells from the California Department of Water Resources and Zone 7 Water Agency (Item 11 on Table 2).

TABLE 2

DATA GAPS AND PROPOSED INVESTIGATION

Item	Data Gap	Proposed Investigation	Rationale	Analysis
5	Evaluate the possible presence of impacts to deeper groundwater. Evaluate deeper groundwater concentration trends over time. Obtain data regarding the vertical groundwater gradient. Obtain more lithological data below 20 feet bgs.	Install four continuous multichannel tubing (CMT) groundwater monitoring wells (aka multi-port wells) to approximately 65 feet bgs in the northern parking lot with ports at three depths (monitoring well locations may be adjusted pending results of shallow grab groundwater samples; we will discuss any potential changes with ACEH before proceeding). Groundwater monitoring frequency to be determined. Soil samples will be collected only if there are field indications of impacts. Soil lithology will be logged. However, information regarding the moisture content of soil may not be reliable using sonic drilling technology (two borings will be logged using direct push technology; see Item 4, above).	One well is proposed at the western (upgradient) property boundary to confirm that there are no deeper groundwater impacts from upgradient. Two wells are proposed near the center of the northern parking lot to evaluate potential impacts in an area where deeper impacts, if any, would most likely to be found. One well is proposed at the eastern (downgradient) property boundary to confirm that there are no impacts extending off-site. Port depths will be chosen based on the locations of saturated soils (as logged in direct push borings; see Item 4, above), but are expected at approximately 15, 45, and 60 feet bgs.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
6	Evaluate possible off-site migration of impacted soil vapor in the downgradient direction (east). Evaluate concentration trends over time.	Install 4 temporary nested soil vapor probes at approximately 4 and 8 feet bgs along the eastern property boundary. Based on the results of the sampling, two sets of nested probes will be converted to vapor monitoring wells to allow for evaluation of VOC concentration trends over time.	Available data indicate that PCE and TCE are present in soil vapor in the eastern portion of the northern parking lot. Samples are proposed on approximately 50-foot intervals along the eastern property boundary to provide a transect of concentrations through the vapor plume. The depths of 4 and 8 feet bgs are chosen to provide data closest to the source (i.e., groundwater) while avoiding saturated soil, and also provide shallower data to help evaluate potential attenuation within the soil column. Two sets of nested vapor probes will be converted into vapor monitoring wells (by installing well boxes at ground surface); the locations of the permanent wells will be chosen based on the results of samples from the temporary probes.	*Soil vapor* : VOCs by EPA Method TO-15.
7	Evaluate potential for off-site migration of impacted groundwater in the downgradient direction (east).	Advance two borings to approximately 20 feet bgs in the parking lot of the property east of the Crown site for collection of grab groundwater samples.	Two borings are proposed off-site, on the property east of the Crown site, just east of the building in the expected area of highest potential VOC concentrations.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
8	Evaluate VOC concentrations just north of the highest concentration area.	Advance two borings to approximately 20 feet bgs north of Building A for collection of soil and grab groundwater samples. Soil samples will be collected at two depths in the vadose zone. Soil samples will be collected based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	The highest concentrations of PCE in groundwater were detected at boring NM-B-32, just north of Building A. The nearest available data to the north are approximately 75 feet away. One of the borings will be advanced approximately 20 feet north of NM-B-32 to provide data close to the highest concentration area. A second boring will be advanced approximately halfway between the first boring and former boring NM-B-33 to provide additional spatial data for contouring purposes. These borings will be part of a transect in the highest concentration area.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. *Soil:* VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
9	Evaluate VOC concentrations in soil vapor in the south parcel of the site.	Install four temporary soil vapor probes at approximately 5 feet bgs around boring SV-25, where PCE was detected in soil vapor at a low concentration.	PCE was detected in soil vapor sample SV-25 in the southern parcel, although was not detected in groundwater in that area. Three probes will be installed approximately 30 feet from of boring SV-25 to attempt to delineate the extent of impacts. A fourth probe is proposed west of the original sample, close to the property boundary and the location of mapped utility lines, which may be a potential conduit, to evaluate potential impacts from the west.	*Soil vapor* : VOCs by EPA Method TO-15.
10	Obtain additional information regarding subsurface structures and utilities to further evaluate migration pathways and sources.	Ground penetrating radar (GPR) and other utility locating methodologies will be used, as appropriate, to further evaluate the presence of unknown utilities and structures at the site.	Utilities have been identified at the site that include an on-site sewer lateral and drain line, and shallow water, electric, and gas lines. Given the current understanding of the distribution of PCE in groundwater at the site, it is possible that other subsurface utilities, and specifically sewer laterals, exist that may act as a source or migration pathway for distribution of VOCs in the subsurface.	NA