Ian Robb
Project Manager
Marketing Business Unit

Chevron Environmental Management Company
6111 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 543-2375
Fax (925) 543-2324
irobb@chevron.com

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

Re: Former Signal Oil Station No. 20-6145
800 Center Street
Oakland, CA

I have reviewed the attached work plan dated December 15, 2009.

I agree with the conclusions and recommendations presented in the referenced work plan. This information in this work plan is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This work plan was prepared by Conestoga Rovers Associates, upon who 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,

Ian Robb
Project Manager

Attachment: Work plan

CONESTOGA-ROVERS
& ASSOCIATES

5900 Hollis Street, Suite A
Emeryville, California 94608
Telephone: (510) 420-0700 Fax: (510) 420-9170
http://www.craworld.com

December 15, 2009 Reference No. 312002

Mr. Mark Detterman
Alameda County Environmental Health Services (ACEH)
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Work Plan for Surficial Soil Sampling
Former Signal Oil Station (Chevron Site 20-6145)
800 Center Street
Oakland, California
Fuel Leak Case No. RO0454

Dear Mr. Detterman:

Conestoga-Rovers & Associates (CRA) is submitting this *Work Plan for Surficial Soil Sampling* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. In a letter dated October 16, 2009, Alameda County Environmental Health (ACEH) requested sampling and analysis of lead concentration in surface soil to assess potential risk associated with exposure to lead in surficial soil by future onsite residents (Attachment A). The scope of work outlined in this work plan specifically addresses ACEH's Technical Comment 1c in the above referenced letter. Presented below are a summary of the site background and a description of the proposed scope of work.

SITE BACKGROUND

The site is a former Signal Oil gasoline service station located on the northeastern corner of the intersection of 8th Street and Center Street in Oakland, California (Figure 1). The site was first developed as a service station in 1932 with four 1,000-gallon fuel underground storage tanks (USTs) and one used-oil UST. These USTs were removed in 1973 when the station was closed. The site is currently undeveloped. Both commercial and residential properties are located in the vicinity of the site.

To date, a total of 52 soil borings, 17 groundwater monitoring wells and 6 soil vapor wells have been installed at the site. A summary of activities conducted to date at the site is presented as Attachment B.

SITE GEOLOGY AND HYDROGEOLOGY

Subsurface soil consists of medium estimated permeability sand and silty sand to the maximum depth explored of 80 feet below grade (fbg). Silt, with thin clayey silt and silty clay stringers, occur between approximately 50 and 65 fbg. Local topography is relatively flat and the site is about 15 feet above mean sea level.

Groundwater beneath the site has been monitored quarterly since 1997. There are currently eight monitoring wells screened near the top of the water table: four onsite and four offsite. Nine additional wells monitor groundwater at discrete depths from 35 to 40 fbg, 55 to 60 fbg and 70 to 75 fbg. These deeper screened wells have monitored groundwater quarterly since 2007. Historical depth to groundwater in the shallow-screened wells ranges between approximately 2.5 to 13.0 fbg. Shallow groundwater flow beneath the site is consistently toward the southwest. Deeper groundwater flows from southwest to northeast. The nearest surface water body is Oakland inner harbor, located approximately 1 mile south of the site.

PROPOSED SCOPE OF WORK

CRA proposes to collect 16 soil samples from 8 sampling locations based on California's Department of Toxic Substances Control (DTSC) 2006 *Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (Lead Guidance). To accomplish the scope of work, CRA proposes to conduct the following:

Health and Safety Plan: CRA will prepare a health and safety plan to protect site workers. The plan will be reviewed and signed by all site workers and visitors. The plan will remain onsite during all field activities.

Soil Sampling: Per DTSC's Lead Guidance (Table 3), eight sampling locations have been identified based on one former commercial building with the foundation removed. The locations are laid out in a grid pattern and evenly distributed about the site (Figure 2). Discrete soil samples will be collected at 6 inches below grade and at 2.5 fbg at each of the 8 locations for a total of 16 samples. Soil samples will be collected in glass jars and sealed, labeled, logged on a chain-of-custody form, and transported to a Chevron and State-approved laboratory for analysis.

Laboratory Analysis: The soil samples will be analyzed for lead by EPA Method 6010.

CONESTOGA-ROVERS & ASSOCIATES

December 15, 2009 Reference No. 312002

Reporting: Data collected from the proposed work will be reported in the Report on Surficial Soil Sampling and Well Survey to be submitted on February 15, 2010. The data will also be incorporated into the Revised Human Health Risk Assessment/Corrective Action Plan to be submitted after the Low Flow Air Sparge pilot test is completed.

If you have any questions or comments, please contact Ms. Charlotte Evans at (510) 420-3351 or Mr. Ian Robb at (925) 543-2961.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

PROFESSIONAL GEOLOGIST BRANDON S. WILKEN No. 7564 STATE OF CALIFORNIA

Charlotte Evans Brandon S. Wilken, P.G. # 7564

CE/doh/9

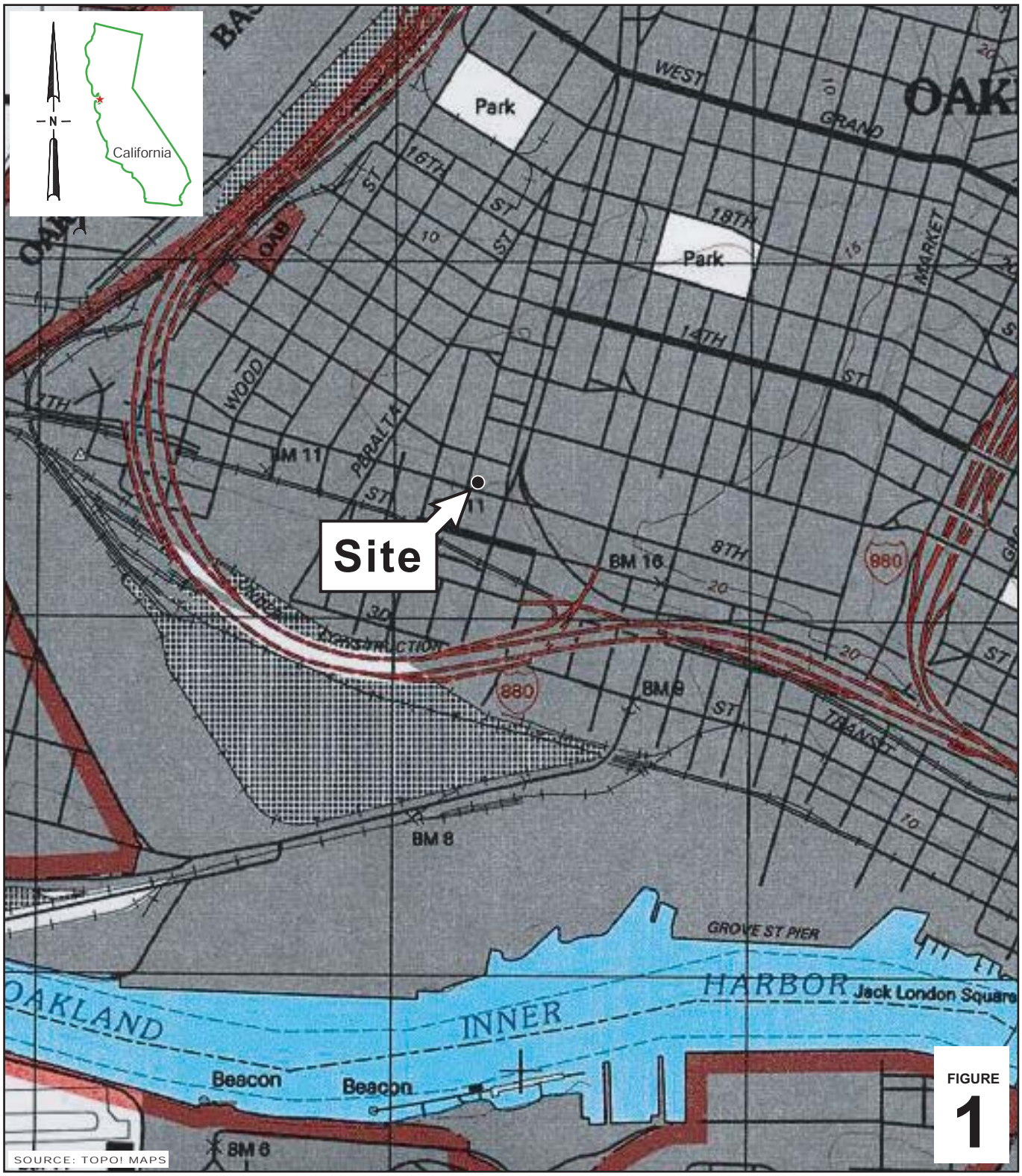
Enc.

Figure 1	Site Vicinity Map
Figure 2	Proposed Surficial Soil Sampling Locations
Attachment A	ACEH Correspondence October 16, 2009
Attachment B	Summary of Previous Environmental Work

cc: Mr. Ian Robb, Chevron Environmental Management Company
Mr. Rene Boisvert, 800 Center LLC

FIGURES

12/14/09



I:\VSFO-SHARED\CHEVRON\206145 OAKLAND\FIGURES\VICINITY-MAP.AI

FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Former Signal Oil Station 206145

800 Center Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

Figure 2

PROPOSED SURFICIAL SOIL SAMPLING LOCATIONS
FORMER CHEVRON SERVICE STATION 20-6145
800 CENTER STREET
Oakland, California

I:\CHEVRON\312002\206145 OAKLAND\312002-FIGURES\312002_20-6145-EM002_SITEPLAN.DWG

ATTACHMENT A

ACEH CORRESPONDENCE DATED OCTOBER 16, 2009

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

October 16, 2009

Mr. Ian Robb
6001 Bollinger Canyon Road K2256 B
PO Box 6012
San Ramon, CA 94583-2324
(sent via electronic mail to irobb@chevron.com)

Mr. Rene Boisvert
Boulevard Equity Group
484 Lake Park Ave #246
Oakland, CA 94610-2730

Terrilla Sadler
618 Brooklyn Avenue
Oakland, CA 94606-1004

Subject: Incomplete Human Health Risk Assessment, Rejection of Revised CAP, and Approval of LFAS Workplan – Fuel Leak Case No. RO0000454 (Global ID # T0600102230), Chevron #20-6145/Signal SS, 800 Center Street, Oakland CA 94607

Dear Mr. Robb, Mr. Boisvert, and Ms. Sadler:

I wanted to let you know that I have recently been assigned to your case. In the future, please send all correspondence or inquiries to my attention. Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above referenced site and the documents entitled *Work Plan for Low Flow Air Sparging Pilot Test and Additional Soil Vapor Sampling*, dated April 27, 2009, and *Revised Draft Corrective Action Plan,* dated May 14, 2009, prepared by Conestoga-Rovers & Associates (CRA) and Arcadis, respectively. Thank you for submitting them. Although the Arcadis document is entitled *Revised Draft Corrective Action Plan* the document is a Human Health Risk Assessment (HHRA); it does not propose alternative corrective actions as requested in Technical Comment 1 of the ACEH letter dated March 16, 2009. It does however evaluate risk associated with residual contamination, as also requested in Technical Comment 1. Both of these recent document submittals were generated in response to Technical Comment 1 contained in the March 2009 ACEH letter.

Based on ACEH staff review of the case file, we request that you address the following technical comments and send us the reports described below.

TECHNICAL COMMENTS

1) **Human Health Risk Assessment**. ACEH has several concerns to note:

   a) Of potential concern is the timing of the LFAS pilot testing, a future full scale system, and construction and occupation of the residential units. While no human health risk currently appear to exist at the site, completed exposure pathways were found (for a construction worker through soil ingestion and vapor inhalation, and for a resident child or adult through vapor inhalation) associated with existing soil and soil vapor concentrations; however, the pending redevelopment of the site will also change site conditions. According to the January 2005 DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* document these can include:

      i) Vapor concentrations in the subsurface may increase, accumulating directly under the foundation of a future building,

      ii) Moisture content of the vadose zone directly under a building may decrease due to the inability of rainwater to infiltrate under the building,

iii) Air permeability and moisture content of the subsurface may be altered due to construction activities associated with building construction, thereby altering the subsurface air permeability and significantly increasing the potential for vapor intrusion to indoor air.

It is understood that, with the exclusion of the highest data point due to data quality concerns, maximum soil vapor concentrations were used to model risk to future residents, and that a standard attenuation factor for slab-on-grade construction of 0.001 was used. However, it is not apparent that soil vapor changes due to future site changes (construction modifications) were evaluated, as these were not discussed in the report. The lack of detailed site specific development plans (including among other, foundation type, utility locations, and etc.) complicates this evaluation. Consequently, while the HHRA appears to have approached the site with available information the HHRA must be considered incomplete for the future residential development. Should detailed site specific development plans exist, please provide a copy to ACEH with the documents requested below. Additionally, ACEH requires a clarification of the timing of the completion of corrective actions in relationship to site development events. This information can be included in the documents requested below.

b) The HHRA did not model groundwater hydrocarbon concentrations, due to either lack of direct exposure at the site specifically, or due to pending groundwater concentration changes, as a result of LFAS pilot testing, or a future full scale system. However, in Figure 3-1 the HHRA stated that the exclusion of domestic / industrial use of groundwater in the risk assessment was because it was an incomplete pathway, and that this was based on a the lack of plans by the City of Oakland to develop local groundwater resources for use as drinking water due to existing or potential salt water intrusion, contamination, or poor / limited quality (*East Bay Plain Groundwater Basin Beneficial Use Evaluation Report,* San Francisco RWQCB Groundwater Committee, June 1999).

Unfortunately this does not account for significant historical usage of groundwater in older parts of Oakland as is documented by the high density of historic wells in west Oakland (Figure B-3, Appendix B of this reference) which can lead to exposure of residents to residual groundwater contamination if used for irrigation or other consumptive purposes. Because of the likely presence of groundwater wells (either existing or improperly destroyed) in the vicinity, the likelihood of exposure to residual contamination could reasonably be presumed to be higher than is typical for most of the East Bay Plain. At present groundwater in this area of the basin remains classified as 'MUN' (potentially suitable for municipal or domestic water supply). Reflective of this, Figure 19 (op. cite.) includes this region of Oakland in Zone A, a "significant drinking water resource." Until otherwise classified, groundwater beneath the subject site must be considered beneficial for these uses unless shown to be non-beneficial using criteria presented in the Basin Plan. Please adjust your evaluation to reflect this in future reports. However, please also be aware that case closure does not necessarily require cleanup to MUN cleanup goals, only that those goals can be met within a reasonable timeframe. However, ACEH is requesting that a vicinity well survey be conducted that includes at a minimum Alameda County sources to determine if these old wells remain in the vicinity and report the results in the documents requested below.

c) To protect construction workers from risks associated with lead in soil, the HHRA utilized data from twelve soil samples analyzed for lead from six locations, each collected at 5 and 10 feet bgs, and excluded resident contact with subsurface soil. However, should there be a concern with lead concentrations at the site future residents would most likely be exposed to surficial lead concentrations. From a review of the comprehensive soil data tables contained in the June 3, 2008, *Site Conceptual Model and Corrective Action Plan* generated by CRA, it appears that surficial lead concentrations in soil have not been evaluated at the site. From a development perspective it would be warranted to preclude future residential exposure to this potentiality in an area of older development. We request that you submit a work plan to conduct the work required to collect, analyze, and evaluate surface soil for lead content, and report the results with conclusions in the report requested below.

2) **Revised CAP / HHRA.** As you are likely aware, public participation is a requirement for the Corrective Action Plan (CAP) process. Remediation goals for all media, including soil, groundwater classified as MUN, and vapor phase, must be identified in a CAP. Within a CAP, each viable alternative requires evaluation not only for cost-effectiveness, but also the timeframe to reach the identified cleanup levels and cleanup goals, includes a discussion of the feasibility and limitations for each remedial alternative, a detailed description of the proposed remediation including confirmation sampling and monitoring during implementation, and post-remedial monitoring. Consequently the submitted revised CAP is useful as a HHRA representative of this site; however, is inadequate as a revised CAP. We request that you update the draft CAP in order to address remediation goals in all media including soil, vapor, and groundwater, and submit a revised draft CAP according to the schedule below. Again, please note that soil cleanup levels should ultimately (within a reasonable timeframe) achieve water quality objectives (cleanup goals) for groundwater in accordance with the SFRWQCB Basin Plan. Please specify appropriate cleanup levels and cleanup goals in accordance with 23 CCR Section 2725, 2726, and 2727 in the revised draft CAP.

   Upon ACEH approval of a revised CAP, ACEH will notify potentially affected members of the public who live or own property in the surrounding area of the proposed remediation described in the revised CAP. Public comments on the proposed remediation will be accepted for a 30-day period.

3) **Work Plan for Low Flow Air Sparging.** The ACEH generally concurs with the implementation of the pilot test for LFAS. LFAS is believed by CRA to be effective at enhancing biodegradation of groundwater and in soils in the saturated zone, and may be effective with residual contamination in the vadose zone as indicated by CRA (smear zone). Residual soil contamination is predominately documented at two discrete sampling depths of 10 and 15 feet below grade surface (bgs), while samples at 5 feet and 20 feet bgs are significantly cleaner. Consequently it appears that the bulk of residual soil contamination is within or below the zone of groundwater fluctuation, which has generally ranged between approximately 5 and 10 feet bgs. ACEH has three potential concerns relative to the proposed remediation methodology:

   a) While LFAS is not anticipated to volatilize hydrocarbons from the saturated zone, it appears warranted to verify this hypothesis by monitoring soil vapor at multiple existing vapor points a minimum of one time during the pilot test period, closely associated but prior to termination of the pilot test when soil vapor conditions have stabilized or are likely close to a maximum. We request that you collect soil vapor at existing vapor points VP-1, VP-3, VP-4, and VP-5 to confirm the working hypothesis, and report the results with conclusions in the report of pilot test results requested below.

   b) Confirmation of the reduction of residual soil contamination between 10 and 20 feet bgs is warranted to verify the effectiveness of LFAS on the residual soil mass. Presumably this would be in close proximity to previously documented elevated soil concentrations, but at an appropriate time associated with termination of a LFAS system (pilot or full scale) in the future.

   c) Additional benefit may be derived by the installation of an additional LFAS point in the vicinity of soil samples EXB-3 (12), SW-6, and SW-7 due to elevated residual soil concentrations and a position upgradient of well MW-1A. Residual soil concentrations in this vicinity are likely contributory to the groundwater plume located further downgradient at the site as indicated by groundwater samples collected from wells MW-1A, MW-13, and MW-14, but which do not appear to contribute to soil vapor concentrations detected at VP-4.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Mr. Mark Detterman), according to the following schedule:

- **December 1, 2009 – LFAS Work Plan Addenda.** Including clarifications relative to construction timing.
- **December 15, 2009 – Surficial Soil Sampling Work Plan.**
- **February 15, 2010 – Report on Surficial Soil Sampling & Well Survey**.

- **Seven Months After LFAS Work Plan Approval – Report on Pilot Test.** Report summarizing pilot test results, field procedures, laboratory results, boring logs, confirmation vapor point sampling, analysis of surficial lead to future residents, and recommendations.

- **Three Months After Pilot Test Report – Revised Draft CAP**.

These reports are requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

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, 6835, 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, later 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.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Mark E. Detterman, PG, CEG
Hazardous Materials Specialist

cc: Charlotte Evans, Conestoga-Rovers & Associates, 5900 Hollis Street, Suite A, Emeryville, CA 94608
(sent via electronic mail to cevens@craworld.com)
Leroy Griffin, Oakland Fire Department 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032
(sent via electronic mail to lgriffin@oaklandnet.com)
Donna Drogos (sent via electronic mail to donna.drogos@acgov.org)
Mark Detterman (sent via electronic mail to mark.detterman@acgov.org)
File

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

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) 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

- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**. (Please do not submit reports as attachments to electronic mail.)
- 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)

Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in **Excel** format. These are for use by assigned Caseworker only.

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 dehloptoxic@acgov.org
         Or
      ii) Send a fax on company letterhead to (510) 337-9335, to the attention of My Le Huynh.
   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 ftp://alcoftp1.acgov.org
      (i) Note: Netscape and Firefox browsers will not open the FTP site.
   b) Click on File, then on Login As.
   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 dehloptoxic@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 B

SUMMARY OF PREVIOUS ENVIRONMENTAL WORK

SUMMARY OF PREVIOUS ENVIRONMENTAL WORK

***1989 Subsurface Investigation*:** In August 1989, Subsurface Consultants Inc. (Subsurface) advanced soil borings B1 through B5 to depths ranging from 4.5 to 26 feet below grade (fbg) in the vicinity of the former underground storage tanks (USTs), dispenser island, and sumps along the eastern property boundary. Temporary wells were installed in borings B1 and B3. The highest concentrations of total petroleum hydrocarbons as diesel (TPHd), total petroleum hydrocarbons as gasoline (TPHg), and benzene in soil were 14,000 milligrams per kilogram (mg/kg), 31,000 mg/kg, and 500 mg/kg, respectively. A soil sample collected from 3.5 fbg in boring B-5, near the former hydraulic hoist, contained 16,000 mg/kg oil and grease. No TPHd was detected in grab groundwater samples collected from borings B1 and B3. The groundwater sample from boring B3 contained benzene at a concentration of 340 micrograms per liter (µg/L). Additional information available in Subsurface's October 13, 1989 *Preliminary Hydrocarbon Contamination Assessment*.

***1995 Subsurface Investigation*:** In October 1995, Groundwater Technology Inc. (GTI) advanced borings SB-1 through SB-3 to 12 fbg and installed groundwater monitoring wells MW-1 through MW-4 to 15 fbg. The highest detected concentrations of TPHg and benzene in soil were 14,000 mg/kg and 120 mg/kg, respectively. Additional information available in GTI's November 14, 1995 *Additional Site Assessment Report*.

***1996 Subsurface Investigation*:** In March 1996, Pacific Environmental Group (PEG) advanced soil borings P-1 through P-9. The highest detected TPHg and benzene impacts in grab groundwater samples were found in boring P-2, located in Center Street at concentrations of 800,000 mg/kg and 13,000 mg/kg, respectively. The highest detected TPHg and benzene impacts in soil were found in boring P-3 at concentrations of 13,000 mg/kg and 41 mg/kg, respectively. Additional information available in PEG's April 18, 1996 *Soil and Groundwater Investigation*.

1996 Well Installation: In December 1996, PEG advanced offsite borings MW-5 through MW-8. All borings were converted into groundwater monitoring wells, except boring MW-8, because no evidence of petroleum hydrocarbons was observed in that boring. TPHg and benzene were not detected in any soil sample analyzed as part of this investigation. Additional information available in PEG's January 24, 1997 *Soil and Groundwater Investigation*.

1997 Soil Vapor Sampling: PEG advanced soil vapor points SV-1 through SV-5 to depths up to 12 fbg. The highest concentrations of TPHg and benzene in soil were 8,000 mg/kg and 52 mg/kg, respectively. The highest concentrations of TPHg and benzene in soil vapors were 50,000 µg/L and 65 µg/L, respectively. Hydrocarbon vapor concentrations in soil were highest

in the interval between 6 and 10 fbg. Additional information available in PEG's January 24, 1997 *Soil and Groundwater Investigation*.

***1999/2001 Site Demolition*:** Gettler-Ryan, Inc. (G-R) conducted the removal of the dispenser island, sumps, the hydraulic hoist, building foundations, garbage enclosure, yard lights and asphalt. A 1,000-gallon UST, a 550-gallon used oil UST, and a buried 55-gallon drum (apparently a makeshift used oil UST) were encountered. This work was initiated in September 1999 and was postponed until April 2001, while Chevron and the property owner negotiated UST ownership. The 1,000-gallon UST, 550-gallon used oil UST, 55-gallon drum, and the hydraulic hoist were removed and compliance samples were collected and analyzed. The highest TPHg and benzene impacts in soil were found in soil from the former gasoline UST cavity at concentrations of 630 mg/kg and 10 mg/kg, respectively. Additional information available in Delta's May 21, 2001 *Compliance Soil Sampling During Removal of Underground Storage Tanks*.

***2002 Monitoring Well Installation*:** G-R installed groundwater monitoring well MW-8 offsite. No soil samples contained TPHd, TPHg, benzene, or methyl tertiary butyl ether (MTBE). Additional information available in Delta's April 11, 2002 *Monitoring Well Installation Report*.

***2002 Subsurface Investigation*:** G-R advanced soil borings GP-1 through GP-23 to approximately 12 fbg. Soil samples were collected at 5 and 10 fbg in each boring. The results were used to profile soil from the anticipated over-excavation event for landfill acceptance. Boring GP-9, at 10 fbg, contained the highest detected concentrations of TPHg and benzene in soil at 19,000 mg/kg and 83 mg/kg, respectively. The highest detected concentration of MTBE in soil was 170 mg/kg collected from boring GP-14 at 10 fbg. Additional information available in G-R's July 31, 2002 *Soil Borings* report.

***2002 Over-excavation*:** G-R over-excavated soil in the areas of the former USTs, dispenser island, hydraulic lift, and sumps to a total depth of approximately 12 fbg, with a maximum depth of 14 fbg in one location, during November 2002. Approximately 1,584 tons of hydrocarbon-impacted soil were removed from the site and transported to Allied Waste Landfill in Manteca, California. Thirty-four confirmation soil samples were collected during the over-excavation. Well MW-1 was destroyed by over-excavation during this event. Prior to backfilling, approximately 900 pounds of oxygen releasing compound was placed in the bottom of the over-excavations, and Class II aggregate base was used for backfill. Additional information available in Delta's January 23, 2003 *Well Destruction, Over-Excavation and Soil Sampling Report*.

***2003 Soil Borings and Well installation*:** Delta Environmental Consultants (Delta) advanced soil borings GP-24 through GP-30 to approximately 16 fbg, with soil samples collected at 5, 10, and 15 fbg. Monitoring well MW-1A was installed near former monitoring well MW-1. The highest detected concentration of TPHd was 1,600 mg/kg collected from both boring GP-27 at 15 fbg and GP-30 at 10 fbg. Boring GP-30, at 10 fbg, contained the highest detected concentrations of TPHg, benzene, and MTBE in soil at 16,000 mg/kg, 92 mg/kg and 150 mg/kg, respectively. Additional information available in Delta's May 15, 2003 *Soil Boring and Well Installation Report*.

2004 Geoprobe and CPT Investigation: In October and November 2004, five CPT borings and nine Geoprobe borings were advanced to further define both lateral and vertical extents of hydrocarbon impacts beneath the site. All borings were conducted onsite except CPT-5 which was located offsite in Center Street. Both soil and grab groundwater samples were collected and analyzed. Vertical definition of hydrocarbons in soil was achieved between 15 and 20 fbg, with minor exceptions of single digit results of TPHg between 25 and 50 fbg. Analytic results of grab groundwater samples showed an unusual vertical profile of hydrocarbons in groundwater. It is surmised that these concentration may result from cross contamination during the boring process. Additional information in Cambria Environmental Technology's January 14, 2005 *Subsurface Investigation Report*.

2007 Well Installation and Subsequent Sampling: CRA installed nine clustered monitoring wells (MW-9 through MW-17) to further define the vertical profile of hydrocarbons beneath the site. Eight wells were screened from 35 to 40 fbg or from 55 to 60 fbg to achieve repeatable depth-discrete groundwater samples. Well MW-17 was screened from 70 to 75 fbg in an attempt to define the maximum depth of the hydrocarbon profile. TPHd concentrations in soil were greatest in MW-17 at 9.5 fbg. TPHg concentrations in soil were greatest at 9.5 fbg in MW-17 but were detected as deep as 49.5 fbg in MW-14. Benzene concentrations in soil were also highest at 7.2 mg/kg in MW-17 at 9.5 fbg. Hydrocarbons were detected in groundwater samples from all of the wells but were in general highest in MW-14 screened from 55-60 fbg. Subsequent groundwater monitoring and sampling events indicated that hydrocarbon concentrations were decreasing in these wells. CRA recommended adding these wells to the current quarterly monitoring and sampling schedule starting fourth quarter 2007. Additional information available in CRA's May 14, 2007 *Well Installation Report* and October 1, 2007 *Third Multi-Level Groundwater Monitoring Report*.

2008 Soil Vapor Probe Installation: On October 25, 2007 CRA installed soil vapor probes VP-1 through VP-6 and on November 6, 2007 collected soil vapor samples to evaluate the potential risk of vapor intrusion to proposed residential housing units. TPHg was detected above reporting limits in VP-1, VP-4 and VP-5. Maximum TPHg concentrations were detected in VP-5 at 2,100,000 micrograms per cubic meter ($\mu g/m^3$). Benzene was not detected above reporting

limits in any of the samples. The report concludes that no remediation to lessen soil vapor risks is required based on the lack of carcinogenic constituents detected in soil vapor samples. Additional information available in CRA's January 23, 2008 *Feasibility Study/Corrective Action Plan Addendum*.

2008 Soil Vapor Investigation: On October 3, 2008, CRA re-sampled vapor wells VP-1 and VP-3 through VP-6 to confirm initial analytical results. VP-2 could not be sampled due to water in the tubing. TPHg was detected in VP-4 and VP-5 and was highest in VP-5 at 120,000 micrograms per cubic meter. No carcinogens, including benzene, were detected in any sample. Additional information available in CRA's November 18, 2008 *Soil Vapor Investigation Results*.