Stacie H. Frerichs
Team Lead
Marketing Business Unit

Chevron Environmental Management Company
6001 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 842-9655
Fax (925) 842-8370

March 14, 2011

Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Chevron Facility #_9-7127_____

Address:_Grant Line Road and Interstate 580, Tracy, California_____

I have reviewed the attached report titled *Work Plan for Additional Investigation* and dated March 14, 2011.

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 Conestoga-Rovers & Associates, upon whose assistance and advice I have relied.

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

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

SHFrerichs

Stacie H. Frerichs
Project Manager

Enclosure: Report

CONESTOGA-ROVERS
& ASSOCIATES

10969 Trade Center Drive, Suite 107
Rancho Cordova, California 95670
Telephone: (916) 889-8900 Fax: (916) 889-8999
www.CRAworld.com

March 14, 2011 Reference No. 631656

Mr. Mark Detterman, P.G., C.E.G.
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Work Plan for Additional Investigation
Former Chevron Service Station 9-7127
I-580 and Grant Line Road
Tracy, California
LOP Case RO0000185

Dear Mr. Detterman:

Conestoga-Rovers & Associates (CRA) has prepared this *Work Plan for Additional Investigation* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. CRA previously submitted the October 4, 2010 *Vacuum Extraction Event Report and Work Plan for Surfactant-Enhanced Recovery* (report/work plan), in which the implementation of surfactant-enhanced recovery (SER) was proposed to address residual light non-aqueous phase liquid (LNAPL). In a letter dated December 16, 2010 (Attachment A), Alameda County Environmental Health (ACEH) requested additional site characterization to further assess the residual source area, evaluate hydrogeologic conditions, and more closely define the extent of LNAPL prior to implementation of any remedial action. In the December 16, 2010 letter, ACEH requested submission of a work plan by February 14, 2011; however, in an e-mail to CRA on February 8, 2011, ACEH granted an extension of this due date to March 14, 2011.

To address ACEH's requests, CRA proposes drilling five exploratory borings and installing seven additional monitoring wells. Presented below are the site description and background, a discussion of the regional and site geology and hydrogeology, and the proposed scope of work.

SITE DESCRIPTION AND BACKGROUND

The site is a vacant lot located on the east side of Grant Line Road, just south of Interstate 580 in rural Tracy (Figure 1). The site is situated in the rolling foothills east of Altamont Pass, at an elevation of approximately 320 feet above mean sea level. The site is bounded by an Interstate 580 on-ramp to the north, Grant Line Road to the west, and undeveloped (grazing) land to the south and east. Chevron operated a service station at the site from 1971 to 1986. Former station facilities included two 10,000-gallon and one 6,000-gallon gasoline underground

storage tanks (USTs), a 1,000-gallon used-oil UST, a 750-gallon heating oil UST, two dispenser islands, and a station building (Figure 2). The station closed in 1986, and in 1991, was demolished and all aboveground and belowground facilities removed. The site has since remained vacant land. We understand from the property owner, Mr. Ardavan Onsori, that the site is proposed for redevelopment with a new service station.

A former domestic water-supply well is present onsite (Figure 2) that reportedly is used for livestock; based on annual sampling results, the well is not impacted.

Environmental work has been ongoing since 1987 and has included the sampling of temporary soil vapor probes V1 through V15; the drilling of exploratory borings B-1 through B-7 in 1987, B-1 in 1992, and B-3 in 1993; the installation of monitoring wells MW-1 through MW-8 both on- and offsite, and confirmation soil sampling during station demolition. Wells MW-1, MW-3, MW-4, and MW-6 are sampled semi-annually during the second and fourth quarters; the remaining wells are sampled annually during the second quarter. Well MW-8 was damaged by a vehicle and sampling has been discontinued. The water-supply well is sampled annually during the fourth quarter. A summary of the environmental work is included as Attachment B. The approximate well, boring, and sample locations are shown on Figure 2.

LNAPL at generally less than 2 feet has been measured in MW-1 located just downgradient of the former gasoline USTs. During the last four monitoring events LNAPL has also been observed at less than 1 foot in the next downgradient well (MW-3), located approximately 100 feet from MW-1 (Figure 2). Numerous remedial technologies (hand bailing, passive skimmers, bioremediation, groundwater extraction, hydrogen peroxide injection) have been implemented at the site; however, none have been successful in mitigating LNAPL.

The October 4, 2010 report/work plan documented a vacuum extraction event/pilot test performed in May 2010. The purposes of the work were to remove LNAPL and to evaluate hydrogeologic conditions for the potential use of SER as a remedial option. During the event, extraction was performed from wells MW-1 and MW-3, and data-logging pressure transducers were placed in surrounding wells to monitor any drawdown. The results indicated that MW-1 was in good hydrogeologic communication with MW-3 (drawdown and a reduction in LNAPL observed), which in turn was in good communication with wells MW-5, MW-6, and MW-7. The fluid volumes extracted from MW-1 and MW-3 were consistent with those necessary for SER. Therefore, it appeared that any surfactant placed in MW-1 and MW-3 could be adequately recovered and the surrounding wells would provide good monitoring points. Based on the results, the site appeared to be a good candidate for SER and a work plan for implementation was proposed. However, in the December 16, 2010 letter, ACEH requested additional site characterization prior to implementation.

GEOLOGY AND HYDROGEOLOGY

Regional and Site Geology

The San Joaquin Valley lies within the southernmost part of the Great Valley Geomorphic Province of California, which is characterized by a large elongate northwest-trending structural trough that is bounded by the Sierra Nevada to the east and the Coast Ranges to the west. Regional subsurface materials are dominated by unconsolidated to semi-consolidated continental deposits of Late Tertiary to Quaternary age. Deposits in this region include the Franciscan Formation, Older Alluvium, Flood Basin Deposits, and Younger Alluvium. The cumulative thickness of these deposits ranges from a few hundred feet on the west to approximately 3,000 feet on the east (California Department of Water Resources [DWR], California's Groundwater Bulletin 118, October 2003). The Midway Fault, an approximate north-south trending normal fault, is located approximately 300 feet east of the site.

The property was developed by cutting out of the hillside and filling; hence, the elevation drops off on the north, east, and south sides of the site. Boring logs indicate that soil beneath the site consists primarily of fill (combinations of sand, silt and clay), silty clay, clayey sand, silty sand and gravel to a maximum depth of approximately 19 feet below grade (fbg). This soil is underlain by Franciscan Formation sediments, consisting primarily of sandstone that extends to the maximum explored depth of 40 fbg.

Regional and Site Hydrogeology

The site lies within the Tracy Sub-basin of the larger San Joaquin Valley Groundwater Basin. The Tracy Sub-basin is bounded by the Mokelumne and San Joaquin Rivers to the north, the San Joaquin-Stanislaus County line to the south, the San Joaquin River to the east, and the Diablo Coast Range to the west. The Tracy Sub-basin is drained by the San Joaquin River and is one of its major westside tributaries (DWR Bulletin 118, October 2003).

Groundwater was encountered in the borings at depths ranging from approximately 12 to 30 fbg within the sandstone bedrock. The depth to groundwater in the wells has ranged from approximately 23 to 31 fbg onsite and 9 to 14 fbg offsite with the difference caused by ground surface elevation changes. The groundwater flow direction is generally to the north at an approximate gradient of 0.005 to 0.08 (see rose diagram on Figure 2).

The sandstone bedding appears to have an approximately north-south strike orientation. The hydrocarbon distribution at the site also appears to be linear to the north-south. There appears to be a correlation between the strike of the bedrock, the groundwater flow direction, and the narrow distribution of hydrocarbons in that they all appear oriented north-south. If the fractures observed during installation of several site wells are also oriented north-south,

groundwater may be flowing within these fractures which could result in a narrow, elongated hydrocarbon distribution.

PROPOSED SCOPE OF WORK

To evaluate the presence and extent of residual hydrocarbons in soils and to further evaluate the extent of hydrocarbons and LNAPL in groundwater, CRA proposes drilling five exploratory borings and installing seven additional monitoring wells. The proposed boring and well locations are shown on Figure 2. The well locations were selected to accommodate the proposed site redevelopment plans. The details of the proposed investigation are presented below.

Permits and Notifications

CRA will obtain all necessary permits for the proposed wells prior to beginning field operations. A minimum of 72 hours written notification will be given to ACEH prior to initiation of drilling activities.

Health and Safety Plan

CRA will prepare a site-specific health and safety plan (HASP) to inform site workers of known hazards and to provide health and safety guidance. The plan will be reviewed and signed by all site workers and visitors and will be kept onsite during field activities.

Underground Utility Clearance

At least 48 hours prior to the start of drilling activities, CRA will mark the proposed well locations in the field and will notify Underground Service Alert (USA) to clear the proposed locations with public utility companies. A private utility locator may also be retained to additionally clear the well locations of utility lines prior to drilling. Each well location will be cleared to approximately 8 fbg for underground utilities using a hand auger in accordance with CRA safety protocols.

Drilling

The borings will first be advanced to approximately 8 fbg using a hand auger to confirm utility clearance. The borings will then be advanced to their total proposed depths using an appropriate drilling method. CRA intends to query experienced drilling companies to confirm the best drilling method to meet the work plan objectives given the subsurface conditions. The depth to groundwater is anticipated to be 25-30 fbg. The five exploratory borings will be advanced to the soil/water interface. The seven monitoring well borings will extend no more than 10 feet below the water table. The final locations and depths of the borings and wells will be based on field conditions. CRA's standard field procedures are included as Attachment C.

Soil Sampling and Laboratory Analysis

Soil samples will be continuously collected from the borings for logging and observation purposes (to the extent feasible with the equipment). The soil encountered in the borings will be logged in accordance with American Society for Testing and Material (ASTM) D-2488 protocols. Soil samples from each boring will be screened in the field for volatile organic vapors using a photo-ionization detector (PID). Samples will be selected for analysis based on field observations, PID readings and groundwater depth. If no evidence of hydrocarbons is observed, soil samples collected at approximately 5-foot intervals from each boring will be submitted for analysis.

Soil samples retained for laboratory analysis will be collected in brass or stainless steel liners, capped using Teflon tape and plastic end caps, labeled, placed in an ice-chilled cooler, and transported under chain-of-custody to Lancaster Laboratories, Inc. (Lancaster) in Lancaster, Pennsylvania, for analysis. The soil samples will be analyzed for:

- TPHg by EPA Method 8015
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and MTBE by EPA Method 8260B

Groundwater Sampling and Laboratory Analysis

If encountered, and if no LNAPL is present, grab-groundwater samples will also be collected from the five borings. The groundwater samples will be collected in the appropriate containers supplied by the laboratory, transported under chain-of-custody to Lancaster, and analyzed for the same constituents above. CRA's standard field procedures are included as Attachment C.

Well Installation

The wells are planned to be screened from approximately 25-35 fbg; however, the screen intervals may be modified based on field observations. The wells will be constructed using 2-inch diameter, Schedule 40 PVC casing with 0.010-inch slotted screen, and a Monterey Sand #2/12 filter pack. The annulus will have a 2-foot bentonite seal above the sand pack and the remainder will be filled with neat Portland cement to approximately 1 fbg. Stovepipes will be installed so the wells can easily be modified flush to grade if the site is redeveloped. CRA's standard field procedures for monitoring well installation are included as Attachment C.

Well Development and Sampling

The wells will be developed to remove fine-grained material a minimum of 72 hours after installation. The wells will be incorporated into the monitoring and sampling program and will initially be sampled quarterly; depending on when the wells are installed, the initial samples

may be collected during the next scheduled event. The groundwater samples will be analyzed for the same constituents identified above.

Well Surveying
The well locations and top of casing elevations will be surveyed relative to mean sea level by a California Licensed Land Surveyor and uploaded into the State Water Resources Control Board (SWRCB) GeoTracker database.

Investigation-Derived Waste
Soil cuttings, purge water, and decontamination rinsate generated during drilling activities will be temporarily stored onsite in properly labeled 55-gallon steel drums, and sampled for disposal purposes. Once profiled, the drums will be removed from the site for disposal at an appropriately-permitted facility.

Report Preparation
After receipt of the final analytical results, CRA will prepare and submit an investigation report. The report will include a description of the field activities, a site plan showing the boring and well locations, tabulated analytical results, boring logs, updated geologic cross sections, and well construction diagrams, analytical reports and chain-of-custody documentation, survey data, and our conclusions and recommendations.

SCHEDULE AND CLOSING

CRA will implement the proposed scope of work upon receipt of approval from ACEH or if at least 60 days have passed since submittal of this work plan with no response. The report will be submitted approximately six weeks after completion of field activities.

We appreciate your assistance on this project and look forward to your reply. Please contact Mr. James Kiernan at (916) 889-8917 if you have any questions or need any additional information.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

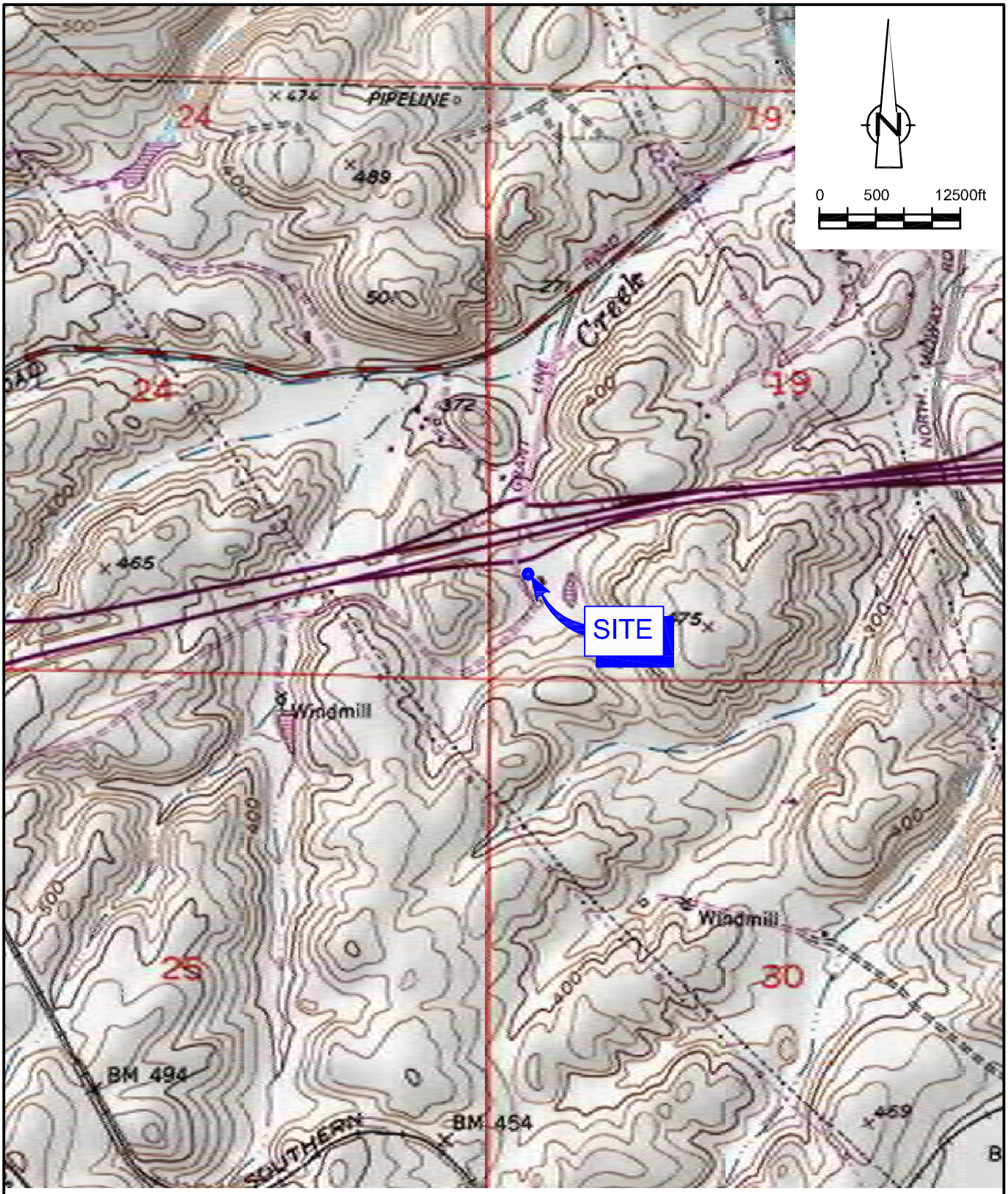
James P. Kiernan, P.E. Ana Friel, P.G.

JK/doh/10
Encl.

Figure 1	Vicinity Map
Figure 2	Site Plan and Proposed Boring and Well Locations
Attachment A	ACEH Letter Dated December 16, 2010
Attachment B	Summary of Environmental Investigation and Remediation
Attachment C	Standard Field Procedures

cc: Ms. Stacie Frerichs, Chevron (electronic copy only)
Mr. Ardavan Onsori, DM Livermore, Inc.

FIGURES

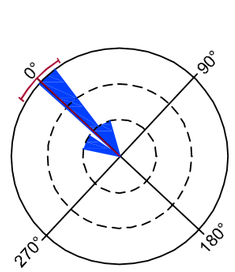


SOURCE: TOPO! MAPS.

Figure 1

VICINITY MAP
FORMER CHEVRON SERVICE STATION 9-7127
GRANT LINE ROAD AND INTERSTATE 580
Tracy, California

631656-201(010)GN-WA002 MAR 11/2011



GROUNDWATER FLOW DIRECTION

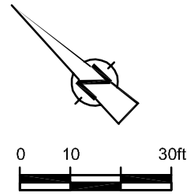


Figure 2

SITE PLAN AND PROPOSED BORING AND WELL LOCATIONS
FORMER CHEVRON SERVICE STATION 9-7127
GRANT LINE ROAD AND INTERSTATE 580
Tracy, California

631656-201(010)GN-WA001 MAR 11/2011

ATTACHMENT A

ACEH LETTER DATED DECEMBER 16, 2010

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

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

December 16, 2010

Ms. Stacie H. Frerichs
6001 Bollinger Canyon Road K2256B
PO Box 6012
San Ramon, CA 94583-2324
(sent via electronic mail to:
staciehf@chevron.com)

Mr. Onsori Ardavan
37 Victoria Drive
Atherton, CA 94027-4122

Frances & Louis Carnazzo
Carnozzo Land Co, Inc, et al
P.O. Box 6031
Atascadero, CA 93423-6031

Ahmad & Shahla Mostofi
37 Victoria Drive
Atherton, CA 94027-4122

Subject: Request for Alternative Work Plan; Fuel Leak Case No. RO0000185 (Global ID #T0600102298), Chevron #9-7127, I 580 and Grant Line Road, Tracy, CA

Dear Responsible Parties:

Alameda County Environmental Health (ACEH) staff has reviewed the case file including the *Corrective Action Plan Addendum and Proposed Feasibility Study,* dated December 31, 2008, the *Work Plan for Groundwater Pumping Test,* dated August 6, 2009, the *Vacuum Extraction Event Report and Work Plan for Surfactant-Enhanced Recovery,* dated October 4, 2010, and the *First Semi-Annual 2010 Groundwater Monitoring Report,* dated July 28, 2010, each prepared on your behalf by Conestoga-Rovers & Associates (CRA). The CAP Addendum recommended a groundwater pumping test to determine if groundwater flow is primarily fracture flow within the bedrock sandstone beneath the site, and the groundwater pumping test work plan detailed work methodologies. Because the site is now slated for redevelopment as a service station and remediation needs to be expedited, the groundwater pumping test was abandoned and a groundwater vacuum extraction event was conducted and reported on in the soil and groundwater investigation report referenced. The report provided rough radius-of-influence data for groundwater vacuum extraction, as well as a work plan for the injection of a surfactant into two wells with free phase (FP) in an attempt to decrease the surface tension between the FP and water and allow desorption of residual FP from saturated soil.

The proposed injection of surfactant at the site is at least the second proposal for surfactant injection at the site. Two previous ACEH letters have requested additional site characterization in part to address potential implementation of these proposals, and also requested further site specific studies relative to the technique, and set submittal timelines for related deliverables; these remain outstanding. At this time the use of surfactant is not approved until outstanding deliverables, inclusive of related deliverables identified in this letter, are submitted.

Based on ACEH staff review of these documents and the work plan we request additional information prior approval of the scope of work. We request that you address the following technical comments regarding the site, and send us the technical documents requested below.

TECHNICAL COMMENTS

1. **Surfactant Injection and Extraction -** The work plan proposes to conduct surfactant-enhanced recovery (SER) of FP from wells MW-1 and MW-3 using the surfactant Ivey-Sol©. The surfactant is reported to be biodegradable, achieving 90% degradation within 28 days in the laboratory. In addition to the outstanding deliverables noted above, ACEH has a number of concerns with this specific

proposal that require a better understanding prior to ACEH consideration of the work. Please address the following comments and submit the requested items:

a. **Site Characterization / Lateral Extent of Free Phase Product –** ACEH is in general agreement that bedrock fractures may create a preferential pathway based on the current linear distribution of FP at the site; however, this distribution assumption (or hypothesis) has not been tested through the installation of additional soil bores or wells that would additionally provide a better estimation of the lateral extent of surfactant flow, the effectiveness of surfactant recovery after injection, or the effectiveness of other potential remedial options. Similarly the extent of FP (including downgradient extent) in the vicinity of well MW-3 has not been defined. The existing well network is a minimum of 75 feet from either of the proposed injection wells, and ranges up to 125 feet in distance. Contaminant delineation is an outstanding ACEH request.

   An analysis of distribution of hydrocarbons in soil contained in the December 31, 2008 *Corrective Action Plan Addendum and Proposed Feasibility Study,* suggests that the limited shallow soil contamination in well MW-1 and the elevated concentrations detected at depth in soil are likely related to groundwater. This also suggests that the location of the residual soil source and FP is not known. This analysis is substantiated by the May 15, 2007 *Corrective Action Plan* where the source was presumed to be within the vadose zone, but is not otherwise known. The apparent poor location control of UST removal confirmation soil samples again affirms this situation. This would limit any ability to target the residual soil source with a remedial technology, including the proposed method.

   As currently proposed the work appears to target FP in two wells and does not seek to target residual soil sources, or to determine the lateral or downgradient extent of FP, or to determine the effectiveness of FP removal, except at the injection wells where the removal rate is likely to be higher. ACEH is not convinced that the proposed work could not be described as a spot treatment of two wells, and not of the site. Moreover, unintended flow of liberated product can occur prior to recognition or could be missed completely with the existing well network. As a consequence, a denser monitoring well network will be required prior to implementation of this or any remedial effort.

   A site assessment was requested in an August 22, 2007 directive letter and remains a valid concern. As documented in the CV RWQCB letter appended to that letter are statements by Ivey International that also indicate that complete site characterization is essential to proper use of surfactant as a remedial tool. ACEH notes that site characterization is not antithetical to careful site development.

   As a consequence of these identified data gaps, inclusive of outstanding deliverables previously noted, the submitted work plan is not approved; rather by the date identified below, please submit an alternative work plan to fill these site characterization data gaps (and potentially others that may be identified in your reviews). A capture zone analysis, as requested in the August 22, 2007 letter, and as proposed in the August 6, 2009 *Work Plan for Groundwater Pumping Test,* would be appropriate using a more closely spaced well network. This network would also help verify the lateral extent of FP or dissolved groundwater concentrations.

b. **Interim Use of Skimmers -** Please evaluate the interim use of skimmers or other appropriate technology, in wells MW-1 and MW-3 as temporary measures to increase the capture of free product at the site between site visits; this FP recovery method has ceased being used at the site.

c. **Justification of Pilot Test Appropriateness –** As stated in both the August 22, 2007 and the August 20, 2008 directive letters, interim remediation must be completed within the corrective action process. As a consequence please justify the choice of the interim remedial alternative in a Feasibility Study / Corrective Action Plan (FS/CAP) which targets all impacted

media at the site by the date identified below. The FS/CAP should utilize data to be generated as a part of the requested alternative work plan.

As required in the August 2008 letter, the FS/CAP should include contamination cleanup levels and cleanup goals, in accordance with the Central Valley Regional Water Quality Control Board (CV RWQCB) Basin Plan for all COCs and for the appropriate groundwater designation. Soil cleanup levels should ultimately (within a reasonable timeframe) achieve water quality control objectives (cleanup goals) for groundwater in accordance with the CV RWQCB Basin Plan. Please propose appropriate cleanup levels and cleanup goals and the timeframe to reach these levels and goals in accordance with 23 CCF Section 2725, 2726, and 2727 in the FS/CAP for active remediation and final cleanup goals. These can be calculated site-specific risk-based cleanup goals and water quality objectives.

The FS/CAP must evaluate at least three viable alternatives for remedying or mitigating the actual or potential adverse affects of the unauthorized release(s) besides the 'no action' and 'monitored natural attenuation' remedial alternatives. Each alternative shall be evaluated by the Responsible Party for remedial effectiveness, cost-effectiveness, and timeframe to reach water quality objectives (cleanup goals), and thereafter propose an appropriate cleanup technology.

2. **Geotracker Well Survey –** Site wells have not been surveyed to Geotracker well survey standards at this site. Please incorporate this work in the requested work plan identified below.

TECHNICAL REPORT REQUEST

Please submit the following deliverable to ACEH (Attention: Mark Detterman), according to the following schedule:

- **February 14, 2011** – Work Plan
- **60 Days After Work Plan Approval** – Soil and Groundwater Investigation Report
- **60 Days After Soil & Groundwater Investigation Response Letter** – FS/CAP or additional appropriate work plan

These reports are being 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.

Should you have any questions, please contact 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

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: James Kiernan, 10969 Trade Center Drive, Suite 106, Rancho Cordova, CA 95670
(sent via electronic mail to jkiernan@craworld.com)
Donna Drogos, ACEH, (sent via electronic mail to donna.drogos@acgov.org)
Mark Detterman, ACEH, (sent via electronic mail to mark.detterman@acgov.org)
Geotracker, e-File

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being 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.

Attachment 1

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** July 20, 2010
	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 (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

- **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 dehloptoxic@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 ftp://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 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 ENVIRONMENTAL INVESTIGATION AND REMEDIATION

SUMMARY OF ENVIRONMENTAL INVESTIGATION AND REMEDIATION
FORMER CHEVRON SERVICE STATION 9-7127
I-580 AND GRANT LINE ROAD, TRACY, CA

1987 Soil Vapor Investigation

In October 1987, EA Engineering, Science, and Technology, Inc. (EA) conducted a soil vapor investigation. Soil vapor samples were collected from temporary vapor points V1 through V12, and V-14 onsite, and V13 and V15 offsite at depths ranging from 3 to 12 feet below grade (fbg). Based on the investigation results, EA concluded that light non-aqueous phase liquid (LNAPL) may be present in the area of the tanks and pump island. Details of this investigation were presented in EA's November 13, 1987 *Report of Investigation*.

1987 Subsurface Investigation

In December 1987, Kleinfelder, Inc. (Kleinfelder) advanced onsite exploratory borings B-1 through B-7. One soil sample was collected from each boring (sample depths ranging from 5 to 20 fbg) and analyzed for total petroleum hydrocarbons as gasoline (TPHg), and benzene, toluene, ethylbenzene and xylenes (BTEX). Water samples were also collected from taps supplied by an onsite water well in December 1987 and January 1988. The samples were analyzed for purgeable aromatics; the only analyte detected was benzene at 2 micrograms per liter (µg/L) and 4 µg/L. Details of this investigation were presented in Kleinfelder's January 6, 1988 *Final Report: Subsurface Environmental Investigation at Chevron Service Station #7127.*

1988 through 1991 Domestic Well Monitoring

In January 1988, groundwater samples were collected from a tap and the onsite water supply well; benzene was detected in the tap samples at 1 µg/L and 1.1 µg/L, but was not detected in the well sample. In February 1989, no TPH or BTEX were detected in samples collected from a tap and the well. Benzene concentrations detected in tap and well samples collected in March and April 1989 ranged from 1.4 to 7 µg/L. In May 1989, Gettler-Ryan Inc. (G-R) installed a carbon adsorption treatment system on the wellhead and began weekly sampling. No TPH or BTEX were detected in samples collected from the well and treatment system influent, mid, and effluent samples in August 1989. From August 1989 to March 1991, 26 samples were collected from the well. TPHg and benzene generally were not detected in the samples with the exception of TPHg in one sample at 320 µg/L and benzene in one sample at 0.07 µg/L. Details of this work were presented in Kleinfelder's March 8, 1988 *Summary of Domestic Water Sampling Activities and Analytical Results* and August 2, 1989 *Domestic Water Contaminant Source Evaluation*, and Pacific Environmental Group's (PEG's) March 22, 1993 untitled report.

1991 Tank, Product Piping, and Dispenser Island Removal

The station was demolished in April 1991. Blaine Tech Services, Inc. (Blaine Tech) observed the removal of two 10,000-gallon and one 6,000-gallon gasoline underground storage tanks (USTs), one 1,000-gallon used-oil UST, one 750-gallon heating oil UST, two dispenser islands, and associated product piping. No holes were observed in the fiberglass tanks. Based on the initial confirmation sampling results, over-excavation of the gasoline UST pit and the product line trenches was conducted. The excavated soil was aerated onsite until detected TPHg concentrations were below 10 milligrams per kilogram (mg/kg) and then used to backfill the

excavations. Details of this investigation were presented in Blaine Tech's June 24, 1991 *Multiple Event Sampling Report.*

1992 Monitoring Well Installation and 1993 Water-Supply Well Sampling
In December 1992, PEG advanced exploratory boring B-1 and installed monitoring wells MW-1 through MW-3. LNAPL was observed in MW-1. PEG performed weekly sampling of the water-supply well from January through March 1993. Details of this work were presented in PEG's March 22, 1993 untitled report.

1993 LNAPL Removal
In 1993, PEG began weekly bailing of LNAPL from MW-1; a passive skimmer was also installed in the well. As of March 1993, approximately 2 gallons of product had been removed. The bailing frequency was then reduced to monthly.

1993 Monitoring Well Installation
In May 1993, PEG advanced exploratory boring B-3 and installed wells MW-4 and MW-5 to further evaluate the extent of hydrocarbons in groundwater. Details of this investigation were presented in PEG's December 3, 1993 untitled report.

1994 Comprehensive Site Evaluation
In October 1994, Weiss Associates (WA) performed a comprehensive site evaluation. Based on the historical data, WA concluded that the hydrocarbon source areas had been removed and that the plume was primarily contained onsite. However, to determine the full extent of the plume, WA recommended the installation of an additional offsite monitoring well north of the site. Further details were presented in WA's October 13, 1994 *Comprehensive Site Evaluation and Proposed Future Action Plan.*

1995 Monitoring Well Installation
In October 1995, PEG installed monitoring wells MW-6 through MW-8 to further evaluate the extent of impacted groundwater. Details of this investigation were presented in PEG's January 25, 1996 *Groundwater Investigation Report*.

1997 Risk-Based Assessment
In June 1997, a Tier 2 Risk-Based Corrective Action (RBCA) assessment was completed for the site. The results indicated that groundwater ingestion could pose a risk to human health due to the elevated TPHg and benzene concentrations in wells MW-1, MW-3, and MW-4. The assessment also indicated that the onsite water supply well was a potential receptor for residual concentrations of petroleum hydrocarbons in the subsurface. Further details were presented in PEG's June 27, 1997 *Risk-Based Corrective Action-Tier 2* report.

1998-2001 Bioremediation
In August 1998, Oxygen Releasing Compound® (ORC) socks were installed in MW-1, MW-2 and MW-4 to reduce hydrocarbon concentrations via enhanced biodegradation. In July 2001, the sock in MW-1 was removed so that a passive product skimmer could be installed. No information is available as to when the socks in the remaining two wells were removed.

1999 Hydrogen Peroxide Injection

In December 1999, Cambria Environmental Technology, Inc. (Cambria [now CRA]) injected hydrogen peroxide at various concentrations into MW-1 and MW-3 in a further attempt to mitigate LNAPL and reduce hydrocarbon concentrations in groundwater. Details of the work were documented in Cambria's March 30, 2000 *Hydrogen Peroxide Injection* report.

2001 Corrective Action Plan

In May 2001, Delta Environmental Consultants, Inc. (Delta) prepared an interim corrective action plan (CAP) in which the destruction of the onsite water supply well was recommended as well as monthly hand-bailing of LNAPL from MW-1 for two quarters, after which the LNAPL thickness would be re-evaluated. Further details were presented in Delta's May 7, 2001 *Interim Corrective Action Plan*.

2001-2002 Remedial Activities

In July 2001, a passive product skimmer was installed in MW-1 and seven groundwater vacuum extraction events were conducted through April 2002. Approximately 8,300 gallons of groundwater and 2.19 gallons of LNAPL were extracted from MW-1 during this time. In July 2002, vacuum extraction of groundwater from MW-3 was initiated. However, due to an increase in LNAPL thickness in MW-1, extraction from MW-1 and MW-3 was terminated in October 2002.

2003 Remedial Action Plan and Feasibility Study

In April 2003, Delta submitted a remedial action plan (RAP) and feasibility study for the site. Data from the study indicated that groundwater was in a perched zone at approximately 10 to 40 fbg, with underlying confining bedrock. The impacted soil appeared to be limited to the capillary fringe at approximately 25 to 30 fbg, in the vicinity of the former USTs. Potential remedial technologies evaluated included excavation, soil vapor extraction (SVE), groundwater extraction, and natural attenuation. Due to the depth of the source and site lithology, excavation and SVE were not considered viable options. Delta recommended removal of LNAPL from MW-1 using an active mechanical skimmer in conjunction with natural attenuation as the most feasible remedial options for the site. Further details were presented in Delta's April 30, 2003 *Remedial Action Plan and Feasibility Study*.

2007 Groundwater Extraction

In March and April 2007, CRA conducted three additional batch groundwater extraction events from MW-1, and a total of approximately 5,100 gallons of groundwater were removed. The measured LNAPL thicknesses in MW-1 prior to each event were 0.5 feet, 0.36 feet and 0.39 feet.

2007 CAP

In May 2007, CRA submitted a CAP that evaluated three remedial alternatives for the site: oxygen injection, batch groundwater extraction, and surfactant-enhanced recovery (SER). The recommended alternative was SER/groundwater extraction. Details were presented in CRA's May 15, 2007 *Corrective Action Plan.*

2007 Interim Remedial Action Plan (IRAP)

In October 2007, CRA submitted a revised IRAP that proposed the installation of three additional monitoring wells around MW-1 to better evaluate hydrocarbon distribution, hydrogeologic characteristics, and potentially facilitate the remediation of groundwater and vapors from fractures in the bedrock. In addition, CRA proposed SER to remove LNAPL found

in formation pore spaces. Details were presented in CRA's October 19, 2007 *Additional Assessment and Revised Interim Remedial Action Plan.*

2008 CAP Addendum and Proposed Feasibility Study

In December 2008, CRA submitted a CAP addendum and proposed feasibility study in which a groundwater pumping test was recommended to further evaluate the hydrogeologic conditions and behavior of groundwater beneath the site. The information obtained from the pumping test would then be used to further define the necessary scope of remediation, and to further evaluate available remedial options to address LNAPL. Further details were presented in CRA's December 2008 *Corrective Action Plan Addendum and Proposed Feasibility Study.*

2010 Vacuum Extraction Event/Pilot Test

In May 2010, CRA performed a vacuum extraction event/pilot test to remove LNAPL and to further evaluate hydrogeologic conditions for the potential use of SER as the remedial alternative for LNAPL removal. Based on the test results, it appeared that MW-1 was in good hydrogeologic communication with MW-3 (drawdown and a reduction in LNAPL observed), which in turn was in good communication with MW-5, MW-6, and MW-7. Sufficient volumes of water and/or LNAPL were also able to be extracted from MW-1 and MW-3. It appeared that any surfactant placed in MW-1 and MW-3 could be adequately recovered and the surrounding wells would provide good monitoring points. Therefore, the site appeared to be a good candidate for SER and a work plan was presented to implement it. Further details were presented in CRA's October 4, 2010 *Vacuum Extraction Event Report and Work Plan for Surfactant-Enhanced Recovery*.

ATTACHMENT C

STANDARD FIELD PROCEDURES

Conestoga-Rovers & Associates

STANDARD FIELD PROCEDURES FOR SOIL BORING AND MONITORING WELL INSTALLATION

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

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Professional Geologist (PG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4° C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer measurements are used along with the field observations, odors, stratigraphy and groundwater depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch® type sampler or are collected from the open borehole using bailers. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Groundwater monitoring wells are installed to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two feet above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I, II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Waste Handling and Disposal

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

Groundwater removed during development and sampling is typically stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Upon receipt of analytic results, the water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.