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November 5, 2012

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

RECEIVED

10:51 am, Nov 06, 2012

Alameda County
Environmental Health

Re: Former Texaco Service Station 211253
930 Springtown Boulevard
Livermore, California
ACEHS Case No. RO0189

I accept the Draft Feasibility Study and Corrective Action Plan Addendum.

I agree with the conclusions and recommendations presented in this document. The information included is accurate to the best of my knowledge, and appears to meet local agency and Regional Board guidelines. This Draft Feasibility Study and Corrective Action Plan Addendum 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 to the best of my knowledge.

Sincerely,

Carryl MacLeod
Project Manager

Attachment: Draft Feasibility Study and Corrective Action Plan Addendum

CONESTOGA-ROVERS
& ASSOCIATES

5900 Hollis Street, Suite A
Emeryville, California 94608
Telephone: (510) 420-0700 Fax: (510) 420-9170
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November 5, 2012 Reference No. 060058

Mr. Jerry Wickham
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: Draft Feasibility Study/Corrective Action Addendum
Former Texaco Service Station #211253
930 Springtown Boulevard
Livermore, California
ACEH Case RO0189

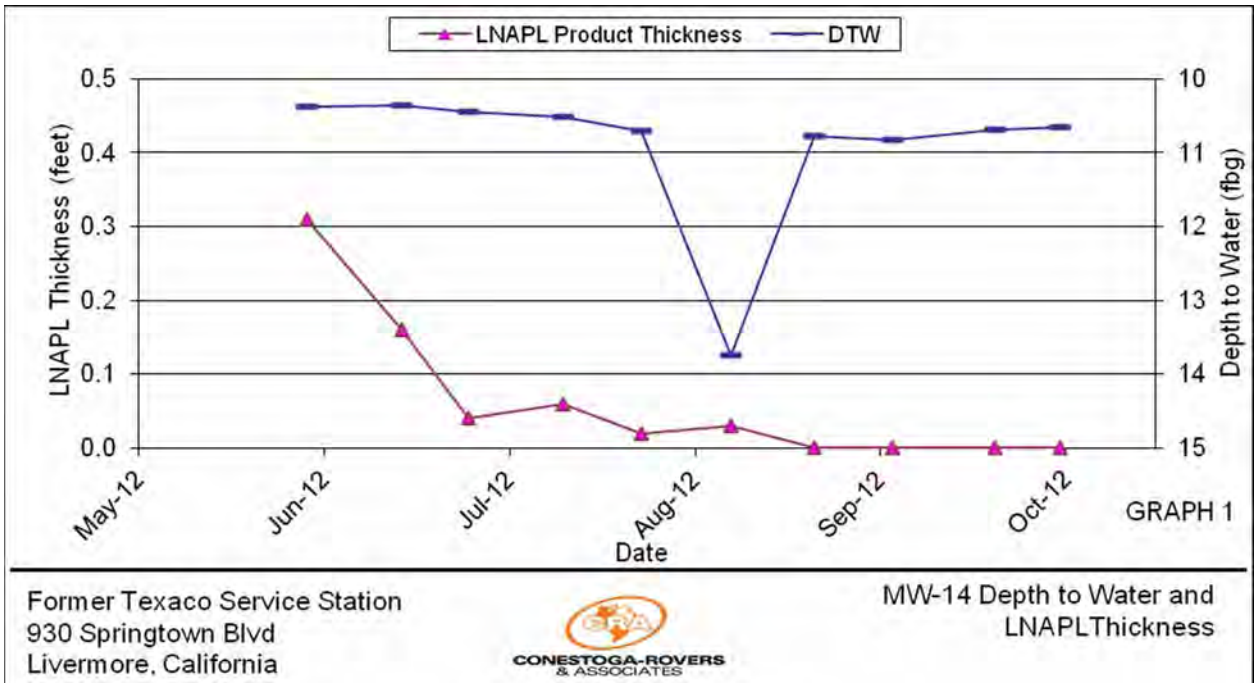
Dear Mr. Wickham:

Conestoga-Rovers & Associates (CRA) is submitting this *Addendum to Draft Feasibility Study/Corrective Action Plan* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above (Figure 1). This document was produced in response to Alameda County Environmental Health Services (ACEH) correspondence dated September 5, 2012 (Attachment A), which was written in response to CRA's *Draft Feasibility Study and Corrective Action Plan* (FS/CAP), dated July 13, 2012. The FS/CAP proposed the use of surfactant-enhanced recovery (SER) of light non-aqueous phase liquid (LNAPL) from well MW-14 as the preferred remedial option. ACEH states in their correspondence that SER can be utilized as an interim step to remove LNAPL from well MW-14, and that a work plan for such measures should be submitted by November 5, 2012. ACEH also states that air sparging/soil vapor extraction (AS/SVE) remains their preferred remedial option for the site. CRA's response is presented below.

INTERIM REMEDIAL ACTION

The final remedy proposed in the FS/CAP (SER) was selected based on site conditions present in early-to-mid 2012, when nearly 1/3-foot of LNAPL was measured in well MW-14. However, as of August 22, 2012 no LNAPL has been observed in well MW-14. As documented in the FS/CAP and *Third Quarter 2012 Groundwater Monitoring and Sampling Report* dated October 30, 2012, CRA has been utilizing sorbent socks in well MW-14. A sorbent sock was initially installed in well MW-14 on May 29, 2012, and Gettler-Ryan (G-R) has monitored and replaced the sock on a bi-weekly basis since then. Gettler-Ryan field logs of describing used sorbent sock change outs are presented as Attachment B.

As shown in Table 1, approximately 5.56 pounds or 0.9 gallon of LNAPL were removed from MW-14 between May 29 and October 2, 2012. Graph 1 shown below presents measured thicknesses of LNAPL versus depth to water (in feet below grade [fbg]) over the monitoring period.[1]



During the monitoring period, LNAPL thickness decreased from 0.31 foot on May 29 to no measurable thickness by August 22, with no measureable LNAPL in three subsequent monitoring events. In addition, on September 21 no LNAPL staining was observed on the sorbent sock. Because there was no measurable LNAPL on August 22, Gettler-Ryan collected a groundwater sample from MW-14 and the sample was analyzed for site constituents of concern (COC).[2] This sample contained 22,000 micrograms per liter (µg/L) total petroleum hydrocarbons as gasoline (TPHg) and 890 µg/L benzene.

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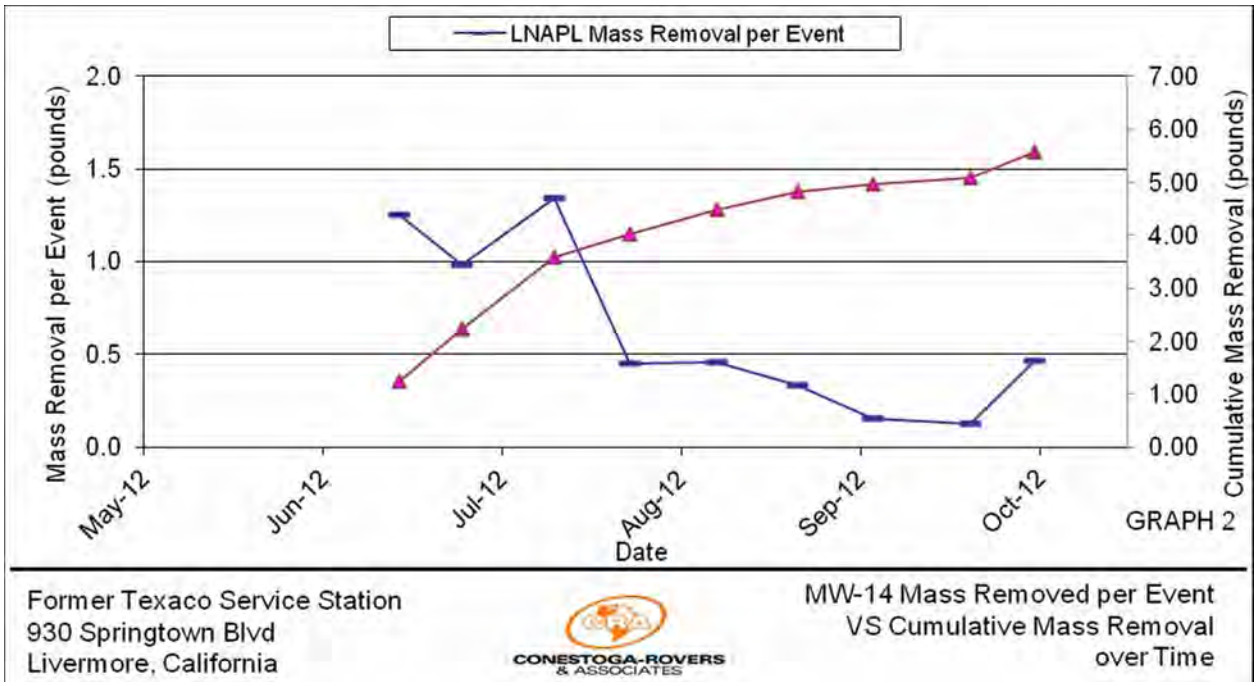
1 The anomalously low depth to water level cited for May 8, 2012 is believed to be a transcription or measuring error, and is likely not representative of actual water table conditions on that date.

2 Gettler-Ryan's field staff indicates no measurable LNAPL was observed in well MW-14 on October 2, 2012.

Graph 2 presents mass of LNAPL removed per event and cumulative mass of LNAPL removed over the monitoring period. As shown, the mass removed per event is declining, and the cumulative mass removed has not substantially increased.



Based on the sorbent sock data and field observations, the remedial action implemented in the past six months appears to be reducing the recoverable LNAPL in MW-14.

DEGRADATION RATE CALCULATIONS

CRA uses the guidance provided within the United States Environmental Protection Agency (EPA) document *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies* (November 2002) to estimate the time to reach water quality objectives. Additionally, CRA also uses the EPA document *On-line Tools for Assessing Petroleum Releases* (September 2004) to assess the proper methodology of determining where to begin a trend analysis. As described in the latter document on page 24, a receptor (in this case, a monitoring well) is located some distance from the source, and no impact to the receptor is seen when the release first occurs. The analytes take time to travel to the receptor. The first data points that show an analyte detection is called the first arrival time. The first arrival time varies for each

receptor based upon distance from the receptor and the transport rates through the heterogeneous medium. As the analyte plume expands and stabilizes, the analyte concentration will reach the maximum concentration. If the source of the release is finite (i.e, a single release from an underground storage tank), the concentration will eventually decrease from the maximum to below the concentration of concern. This period is called the duration.

CRA evaluates the groundwater monitoring data from each well (the receptor) and creates a degradation trend analysis for each analyte from the maximum detection through the latest sampling date. The starting point can vary from the maximum detection if the transport mechanisms are not sufficiently linear. For example, groundwater monitoring data may show that the maximum concentration occurred at some point in the past and that degradation seemed to be occurring. However, due to the heterogeneous nature of the subsurface and seasonal groundwater level fluctuations, the duration does not demonstrate a steady degradation behavior. The concentrations of the analyte may increase one or more times before showing consistent attenuation towards the concentration objective.

CRA calculated dissolved TPHg and benzene concentration trends to meet the RWQCB's environmental screening levels (ESLs).[1] These ESLs are 100 µg/L TPHg and 1 µg/L benzene. CRA used the following first order exponential decay rate calculation[2] to estimate the time to meet the applicable ESLs:

$$y = be^{(ax)}$$

Where "a" is a decay constant, "b" is a concentration at time (x), y is concentration (ESL) and "x" is time. A summary of historical maximum concentrations and current concentrations for all active wells and projections to meet the ESLs are presented in Table A. Trend graphs and degradation calculations are presented as Appendix C.

1 Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, California Regional Water Quality Control Board – San Francisco Bay Region, November 2007

2 EPA-Groundwater Issue; Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies; Charles J. Newell, et al., 2002.

TABLE A - SUMMARY OF DEGRADATION RATE CALCULATIONS
FORMER TEXACO SERVICE STATION 211253, 930 SPRINGTOWN BOULEVARD, LIVERMORE, CALIFORNIA

Well		*Analyte*	*Maximum Concentration (ug/L)*	*Current or Last Concentration (ug/L)*	*Half-Life (years)*	*Date to Reach ESL*	*Years to Reach ESL*
MW-9		TPHg	6,200	1,300	2.58	Aug 2019	7
		Benzene	9	< 5.0	8.85	Mar 2024	11
MW-10		TPHg	16,000	600	0.57	Nov 2012	Near ESL
		Benzene	220	2	0.60	Aug 2011	Below ESL
MW-11		TPHg	5,400	510	0.81	Jun 2013	1
		Benzene	25	< 0.5	0.68	May 2011	Near ESL
MW-12		TPHg	48,000	8,500	1.56	Jan 2022	9
		Benzene	340	< 5.0	0.65	Mar 2015	2
MW-13		TPHg	52,000	35,000	NA	Stable	Stable
		Benzene	2,000	2,000	NA	Stable	Stable
MW-14		TPHg	48,000	22,000	NA	NA	NA
		Benzene	3,600	890	NA	NA	NA
MW-15		TPHg	20,000	< 50	N/A	Below ESL	Below ESL
		Benzene	110	< 0.5	N/A	Below ESL	Below ESL
MW-16		TPHg	430	< 50	1.50	Below ESL	Below ESL
		Benzene	0.6	< 0.5	N/A	Below ESL	Below ESL

Notes and Abbreviations:

TPHg	=	Total petroleum hydrocarbons as gasoline
ug/L	=	Micrograms per liter
ESL	=	Environmental Screening Level
NA	=	Not applicable to trend due to the presence of LNAPL

All wells are predicted to reach ESLs in 11 years or less, except for wells MW-13 and MW-14. Dissolved petroleum hydrocarbon concentrations in MW-13 are stable and LNAPL has been detected in MW-14 until August 2012. However, all the wells surrounding wells MW-13 and MW-14 have decreasing concentration trends, which demonstrate that the petroleum hydrocarbon plume has previously reached its maximum extent and is shrinking back toward the source area. Therefore, it appears that sufficient hydrocarbon mass has been removed by previous remedial actions for natural attenuation to stabilize and degrade the remaining petroleum hydrocarbon plume.

REMEDIAL OBJECTIVES IN ACCORDANCE WITH LOW THREAT CLOSURE POLICY

The primary remedial objective stated in the FS/CAP was to remove LNAPL to the extent practicable, such that that residual dissolved COC concentrations will naturally attenuate and reach environmental screening levels (ESLs) within a reasonable timeframe (less than approximately 50 years). This objective was based on an evaluation of the site conditions against the San Francisco Bay Regional Water Quality Control Board's (RWQCB's) January 5, 1996 *Regional Board Supplemental Instructions to State Water Board December 8, 1995, Interim Guidance on Required Cleanup at Low-Risk Fuel Sites*.

On August 17, 2012, the State Water Resource Control Board (SWRCB) adopted into law its *Low-Threat Underground Storage Tank Case Closure Policy* (LTCP) as Title 23, 2923 (OAL File No. 2012-0618-02 S). The intent of this policy is to increase UST cleanup process efficiency. A benefit of improved efficiency is the preservation of limited resources for mitigation of releases posing the greatest threat to human and environmental health. Per the policy, sites that meet the general and media-specific criteria described in the policy do not pose a threat to human health, safety, or the environment and are appropriate for UST case closure pursuant to Health and Safety Code section 25296.10. The policy further states that sites meeting the stated criteria for low-threat closure should be issued a closure letter if the site is determined to be low-threat based upon a site-specific analysis.

GENERAL LTCP CRITERIA

Provided below is a brief synopsis of how the listed general criteria requirements for LTPC apply to the site.

The Unauthorized Release is Located within the Service Area of a Public Water System
The site and surrounding properties are served by the Zone 7 Water Agency, which utilizes the Mocho II sub basin of the Main Basin in the Livermore Valley to supply drinking water to the public. Additionally, as discussed in the FS/CAP, no water supply wells were identified within 2,000 feet of the site.

The Unauthorized Release Consists Only of Petroleum
The site's unauthorized release has been characterized as a release of petroleum-based products (gasoline). Based on the distribution of hydrocarbons in soil and groundwater, it appears the primary source of petroleum hydrocarbons is the former gasoline USTs and/or dispenser island product piping that were removed in 1985. The primary COCs are TPHg and benzene. Other COCs are toluene, ethylbenzene, and total xylenes.

The Unauthorized ("Primary") Release from the UST System has been Stopped
In 1985, the former USTs and fueling facilities that were the primary source of petroleum hydrocarbons were removed from the site.

Free Product has been Removed to the Maximum Extent Practicable
Currently, no LNAPL is detected onsite and low mass recovery rates are being recorded from the LNAPL sorbent socks in MW-14. Additional remedial action may be needed if the presence of LNAPL reoccurs.

A Conceptual Site Model has been Developed
A conceptual site model was included in the July 3, 2012 FS/CAP that will be revised as additional information is collected.

Secondary Source Removal Has Been Addressed
Prior remedial actions are the removal of the fueling facilities in 1985 and intermittent operation of an air sparing and soil vapor extraction system between November 1994 and 1995. Currently CRA is recovering LNAPL from MW-14 using sorbent LNAPL socks.

Soil or Groundwater has been Tested for MTBE and Results Reported in Accordance with Health and Safety Code Section 25296.15
Soil was analyzed for MTBE during 2001, 2007, 2008, 2009, and 2012 subsurface investigations, and groundwater has been analyzed for MTBE since 1996 through 2002 and 2007 to present. According to soil and groundwater data, MTBE is not a constituent of concern. The results of the analytical testing have been made available and reported to ACEH, as per California Health and Safety Code 25296.15.

Nuisance as Defined by Water Code Section 13050 Does Not Exist at the Site
Nuisance is defined as follows per Water Code Section 130580. All three of the following requirements must be met to cause nuisance:

- Injurious to health, offensive to senses, or an obstruction of free property use
- Affects at the same time an entire community or neighborhood
- Occurs during or as the result of treatment or disposal of wastes (i.e., petroleum release)

Nuisance conditions do not exist at the site.

MEDIA-SPECIFIC CRITERIA REQUIREMENTS

Groundwater-Specific Criteria
Based on our evaluation, CRA determined the site should fall within the following class under the groundwater-specific criteria of the LTCP, with the exception of the recent presence of measurable LNAPL in well MW-14:

2. a. The contaminant plume that exceeds WQOs is less than 250 feet in length.
   b. There is no free product (i.e., LNAPL).
   c. The nearest existing water supply well and/or surface water body is greater than 1,000 feet from the defined plume boundary.
   d. The dissolved concentration of benzene is less than 3,000 µg/L and the dissolved concentration of MTBE is less than 1,000 µg/L.

Therefore, the focus of groundwater remediation should be the removal of LNAPL from MW-14, which has been the only well with measurable LNAPL since the investigation resumed in 2007. Once LNAPL is removed and its recurrence prevented, additional groundwater monitoring would be required to verify that the concentration of benzene in MW-14 will not exceed 3,000 µg/L. On August 24, 2012, the groundwater sample from MW-14 contained 890 µg/L benzene and the highest benzene detection was 2,000 µg/L in well MW-13. Since 2009 when groundwater monitoring and sampling were restarted only one detection of benzene has exceeded the 3,000 µg/L regulatory guideline (3,600 µg/L in MW-14 on February 22, 2010). Therefore, if the reoccurrence of LNAPL has ceased and benzene concentrations remain below 3,000 µg/L then this site meets Class 2 of the groundwater media specific criteria.

Petroleum Vapor-Specific Criteria

In CRA's evaluation of the site conditions against LTCP criteria, an additional data gap has been identified which was presented in the FS/CAP. CRA proposes an assessment of soil vapor concentrations beneath the site to close the indoor vapor intrusion (VI) exposure risk pathway.

Direct Contact and Outdoor Air Exposure

Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in the table below for the specified depth below ground surface, except the soil sample from MW-15 at 9.5 fbg exceeds the residential volatilization to outdoor screening levels (between 5 and 10 fbg) for benzene and ethylbenzene. However, the site is a commercial business and no commercial screening levels are exceeded. In addition, CRA is proposing to complete soil vapor sampling at the site and a more thorough evaluation of the outdoor air exposure pathway can be completed with this data. Naphthalene and polynuclear aromatic hydrocarbons (PAHs) have not been evaluated since the release is from a gasoline source.

	Residential		*Commercial/Industrial*		*Utility Worker*
Constituent	*0 – 5 fbg mg/kg*	*Volatilization to outdoor air (5 – 10 fbg) mg/kg*	*0 – 5 fbg mg/kg*	*Volatilization to outdoor air (5 – 10 fbg) mg/kg*	*0 – 10 fbg mg/kg*
Benzene	1.9	2.8	8.2	12	14
Ethylbenzene	21	32	89	134	314
Naphthalene	9.7	9.7	45	45	219
PAH*	0.063	NA	0.68	NA	4.5

*Notes: Based on the seven carcinogenic polynuclear aromatic hydrocarbons (PAHs) as benzo(a)pyrene toxicity equivalent [BaPe]. The PAH screening level is only applicable where soil is affected by either waste oil and/or Bunker C fuel.

Conclusions and Recommendations

Provided there is no significant indoor VI risk, LNAPL does not recur in well MW-14, and the benzene concentration in MW-14 remains below 3,000 µg/L, the site would qualify for closure under Class 2 criteria stated earlier in this document.

In consideration of the LTCP criteria, CRA proposes to:

- Continue use of sorbent socks for an additional two quarters to evaluate if well MW-14 remains LNAPL-free

- Monitor and collect samples from MW-14 on a quarterly basis for 1 year to provide dissolved-phase data for a chemical trend evaluation (provided the well remains free of LNAPL during that time period)
- Conduct a soil vapor investigation to evaluate VI potential
- Reserve surfactant-enhanced LNAPL recovery as a potential future remedy in the event that LNAPL returns to MW-14
- Reserve air sparging-enhanced soil vapor extraction (AS/SVE) as a potential future remedy in the event a VI risk is quantified

SOIL VAPOR INVESTIGATION WORK PLAN

CRA proposes to install five nested soil vapor probes onsite to assess the potential VI exposure pathway. Three soil vapor probes will be installed to assess the petroleum hydrocarbon plume and two other vapor probes will be installed near the current convenience store onsite to evaluate VI potential. Proposed soil vapor probe locations are shown on Figure 2. Details of the proposed scope of are described below.

Site-Specific Health and Safety Plan

CRA will prepare a site-specific health and safety plan to protect site workers. The plan will be reviewed and signed by all site workers and visitors. The plan will be kept onsite during all field work.

Permits and Access Agreements

CRA will obtain drilling permits from Zone 7 Water Agency and schedule the required inspections prior to beginning field work. CRA will also notify the landowner 2 weeks prior to installing the vapor probes for access to the property.

Underground Utility Location and Utility Clearance

CRA will contact Underground Service Alert (USA) to identify locations of underground utilities. A licensed geophysicist will also be contracted to perform a geophysical survey of pertinent areas to confirm utility locations and identify any previously unidentified utilities. Per Chevron and CRA safety procedures, each soil vapor probe location will be cleared of utilities using hand augers to 8 fbg. No air-knife equipment will be used to ensure that soil vapor is not disturbed.

Soil Borings

Prior to soil boring advancement CRA will collect depth to water measurements in monitoring wells in the vicinity of the proposed soil vapor probes to determine the depth of the nested

vapor probes. Using 3-inch outside diameter hand augers, CRA will supervise the advancement of a soil boring to approximately 10 fbg or one-half to one foot above the water table (estimated currently between approximately 10 and 12 fbg) at the locations shown on Figure 2. CRA geologists will continuously log soils using the ASTM D2488-06 Unified Soil Classification System. Soils will be field-screened using a photo-ionization detector (PID) and visual observations.

Soil Sampling

At least one soil sample will be collected for laboratory analysis approximately every 5 feet. Soil samples will be collected from grade to 8 fbg directly from the hand auger bucket and will be considered disturbed samples. Samples below 8 fbg will be collected using a slide hammer sampler lined with steam cleaned liners and will be considered undisturbed samples. The samples will be sealed, capped, labeled, logged on a chain-of-custody form, placed on ice, and transported to a Chevron and State-approved laboratory for analysis. At least two undisturbed soil sample will be collected and analyzed for physical soil parameters.

Soil Vapor Probe Construction

Vapor probes will be constructed of a permeable stainless steel filter with a ¼-inch push-to-connect fitting connected to ¼-inch outside diameter Teflon® tubing. The vapor probes will be nested at approximately 5 fbg and approximately at 10 fbg or one-half to one foot above the water table (estimated currently between approximately 10 and 12 fbg). The probes will be surrounded by a 12-inch sand pack consisting of #2/12 Monterey sand. Above the sand pack, 12 inches of dry granulated bentonite will be topped with at least 12 inches of hydrated granular bentonite. Each probe will be separated from the others by a grout mixture. The probe tubing will be labeled and capped, and a sealed, traffic-rated well vault will be installed flush to grade.

Soil Vapor Sampling Protocol

Vapor samples will be collected at least 48 hours after the installation of the probes using 100 percent laboratory certified 1-liter Summa™ canisters. Prior to collecting a sample, a closed circuit sampling train is created by attaching the sample Summa™ canister in series with the purge Summa™ canister via a steam-cleaned, stainless-steel manifold. A "shut-in" test will be performed prior to connecting the sampling equipment to the vapor probe tubing. This test is performed by sealing all openings to ambient air, opening the purge Summa™ canister to establish a vacuum inside the sampling train and waiting ten minutes to ensure the vacuum remained stable over time. The shut-in test reduces the potential for ambient air to dilute the soil vapor samples.

Once the sampling train passes the "shut in" test, it is connected to the probe tubing. Using the

same flow rate used during sampling, approximately three purge volumes will be purged from the sampling tubing using the purge Summa™ canister before sampling begins. While sampling, the vacuum of the sample Summa™ canister will be used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 inches of mercury is observed on the vacuum gauge.

In accordance with the Department of Toxic Substances Control (DTSC) *Advisory – Active Soil Gas Investigation* guidance document, dated March 2010, leak testing will be performed during sampling using laboratory grade helium. The vapor probe vault, probe tubing, and entire sampling train will be enclosed in a rigid shroud. The helium concentration inside the shroud will be maintained above 10 percent helium and quantified using a helium meter. After sampling, the Summa™ canisters will be packaged and sent to the Air Toxics laboratory under chain-of-custody for analysis. CRA's *Standard Field Procedures for Soil Vapor Probe Installation and Sampling* is included as Attachment D.

Chemical Analysis
Select soil samples will be analyzed for:

- Total petroleum hydrocarbons as gasoline (TPHg) by Environmental Protection Agency (EPA) Method 8015B modified
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and methyl tertiary-butyl ether (MTBE) by EPA Method 8026B

Soil vapor samples will be analyzed for:

- TPHg, BTEX, MTBE, naphthalene, and TPH fractionation by modified EPA Method TO-15 GC/MS
- Oxygen, nitrogen, carbon dioxide, methane, and helium by modified ASTM Method D-1946

Waste Disposal
Soil cuttings generated will be placed in Department of Transportation approved 55-gallon drums and stored onsite in the former remediation compound pending analytical profiling. Once characterized, these wastes will be disposed of at the appropriate State and Chevron approved facility.

Reporting

Upon completion of field work and review of the analytical results, CRA will prepare *Draft Feasibility Study/Corrective Action Addendum 2* that will contain:

- Descriptions of the drilling and sampling methods
- Vapor probe construction logs with field screening information
- Tabulated soil and soil vapor analytical results
- Laboratory analytical reports and chain-of-custody forms
- Waste disposal details
- An evaluation of the hydrocarbon distribution in soil and soil vapor, including an assessment of the potential VI risks
- An evaluation of the existing monitoring schedule
- An evaluation of the LTCP and remedial options
- An updated conceptual site model
- Conclusions and recommendations

CRA will submit the report approximately eight weeks after completion of field activities and receipt of final laboratory analytical reports.

CLOSING

CRA proposes the following scenarios for the site based on the findings of the VI study, continued sorbent sock monitoring, and groundwater sampling at well MW-14:

- If VI is determined not to pose a significant risk, well MW-14 remains LNAPL-free for a period of four quarters, and dissolved benzene concentrations remain below 3,000 µg/L, CRA will submit a request for closure under the LTCP guidelines.
- If VI is determined not to pose a significant risk, but LNAPL returns to well MW-14, CRA proposes SER to address the LNAPL in the well, followed by an evaluation of site closure under the LTCP guidelines.
- If VI poses a significant risk, use of AS/SVE will be considered as requested by ACEH.

CRA will proceed with the proposed scope of work upon receipt of written approval from ACEH.

We appreciate your assistance with this project. Please contact Tina Hariu of CRA at (510) 420-3344 or thariu@craworld.com if you have any questions or comments.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

Tina M. Hariu, PG 5907, CHG 345

TH/ mws/16
Encl.

Figure 1	Vicinity Map
Figure 2	Site Plan with Utility and Proposed Soil Vapor Probe Locations
Table 1	LNAPL Removed by Sorbent Socks
Attachment A:	Regulatory Agency Correspondence
Attachment B:	Gettler-Ryan Bi-Weekly Absorbent Sock Change Out Field Logs and Sorbent Sock Photographs
Attachment C:	Degradation Calculations and Trend Graphs
Attachment D:	Standard Field Procedures for Soil Vapor Probe Installation and Sampling

cc: Carryl MacLeod (Chevron Environmental Management)
Mr. Joe Zadik
Mr. Ken Hilliard
Mr. Kirk F. Sniff, Esq, Strasburger & Price, LLP

FIGURES

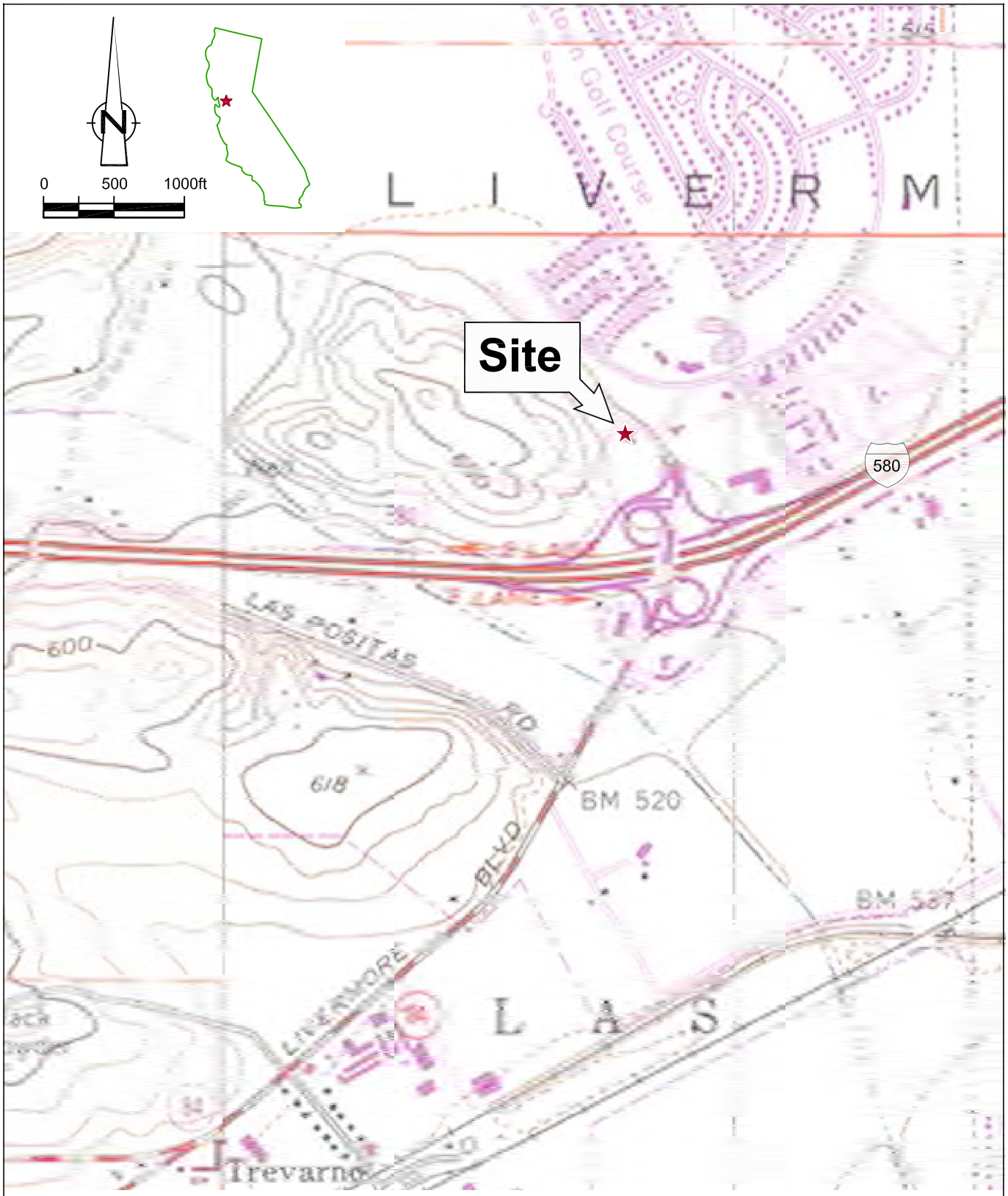


Figure 1

VICINITY MAP
FORMER TEXACO STATION 211253
930 SPRINGTOWN BOULEVARD
Livermore, California

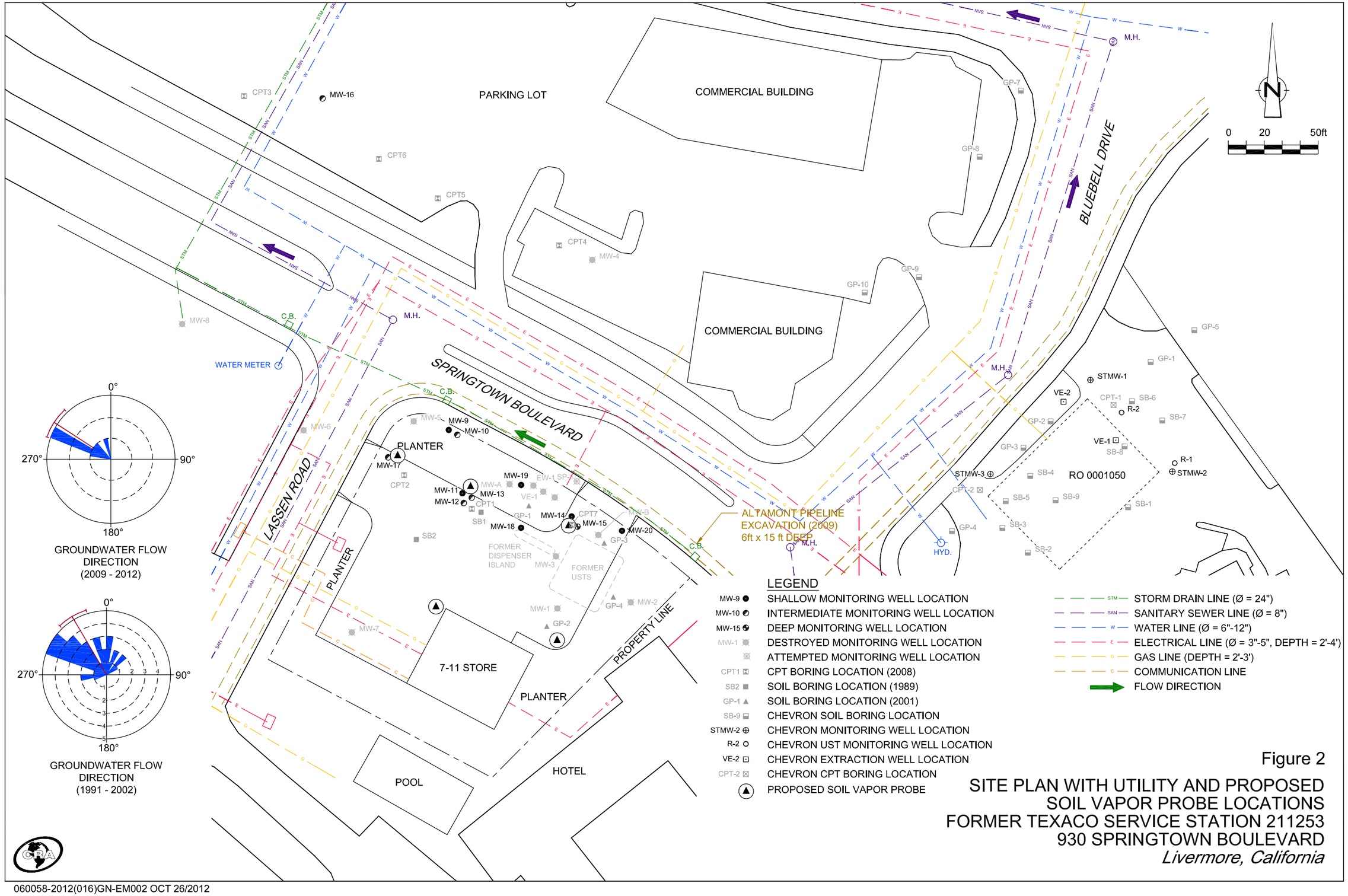


Figure 2

SITE PLAN WITH UTILITY AND PROPOSED
SOIL VAPOR PROBE LOCATIONS
FORMER TEXACO SERVICE STATION 211253
930 SPRINGTOWN BOULEVARD
Livermore, California

060058-2012(016)GN-EM002 OCT 26/2012

TABLE

TABLE 1

LNAPL REMOVED BY SORBENT SOCKS
FORMER TEXACO SERVICE STATION
930 SPRINGTOWN BLVD
LIVERMORE, CALIFORNIA

Sample ID	***Date***	***Length of Sock Showing Saturation (in)***	***Length of Dry Sock Sorbent (in)***	***Weight of Removed Sock (oz)***	***Weight of Dry Sock (oz)***	***LNAPL Weight (oz)***	***LNAPL Weight (lb)***	***LNAPL Volume (gallons)***	***Cumulative LNAPL Removed (lb)***	***DTW (ft bgs)***	***LNAPL Depth (ft bgs)***	***LNAPL Thickness (feet)***	***Comments***
MW-14	5/29/2012									10.38	10.07	0.31	Install Sock
MW-14	6/14/2012	29	7	30	10	20	1.25	0.20	1.25	10.36	10.2	0.16	Sock changeout
MW-14	6/25/2012	7	23	25	9.25	15.75	0.98	0.16	2.23	10.44	10.4	0.04	Sock changeout
MW-14	7/11/2012	6	30	31.5	10	21.5	1.34	0.22	3.58	10.52	10.46	0.06	Sock changeout
MW-14	7/24/2012	6	30	17.2	10	7.2	0.45	0.07	4.03	10.7	10.68	0.02	Sock changeout
MW-14	8/8/2012	18	18	18.3	11.00	7.3	0.46	0.07	4.48	13.74	13.71	0.03	Sock changeout
MW-14	8/22/2012	12	26	14.37	9.08	5.29	0.33	0.05	4.82	10.78	NP	0.00	Sock changeout
MW-14	9/4/2012	3	34	12.13	9.63	2.5	0.16	0.03	4.97	10.82	NP	0.00	Sock changeout
MW-14	9/21/2012	0	31	11	9.00	2	0.13	0.02	5.10	10.69	NP	0.00	Sock changeout
MW-14	10/2/2012	0	8	16.5	9.10	7.4	0.46	0.08	5.56	10.65	NP	0.00	Sock changeout
					Totals	***88.94***	***5.56***	***0.90***					

Notes:
LNAPL = Light non-aqueous phase liquid
DTW = Depth to groundwater
ft bgs = Feet below ground surface
in = Inches
oz = Ounces
Total dissolved total petroleum hydrocarbons as gasoline (TPHg) Volume = Mass (lb) / 6.15 (lbs/gal (US))
Approximate density of TPHg = 6.15 lb/gal (US)
NP = No LNAPL product detected

ATTACHMENT A:

REGULATORY AGENCY CORRESPONDENCE

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

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

September 5, 2012

Ms. Roya Kambin
Chevron Environmental Management Company
6101 Bollinger Canyon Road, 5th Floor
San Ramon, CA 94583-5186
(Sent via E-mail to: RKLG@chevron.com)

Mr. Jose Rios
Environmental Services
7-Eleven, Inc.
One Arts Plaza, 1722 Routh St., Suite 1000
Dallas, TX 75201
(Sent via E-mail to: jose.rios@7-11.com)

Subject: Review of Draft Feasibility Study and Corrective Action Plan for Fuel Leak Case No. RO0000189 and GeoTracker Global ID T0600101353, Chevron #21-1253/Texaco, 930 Springtown Boulevard, Livermore, CA 94550

Dear Ms. Kambin and Mr. Hilliard:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site, including the documents entitled, "*Draft Feasibility Study and Corrective Action Plan*," dated July 3, 2012 (FS/CAP) and "*Second Quarter 2012 Groundwater Monitoring and Sampling Report*," dated June 19, 2012. The FS/CAP, which was prepared on Chevron's behalf by Conestoga-Rovers & Associates, reviewed four remedial alternatives Of the four remedial alternatives evaluated, surfactant-enhanced LNAPL recovery and air sparging /soil vapor extraction (AS/SVE) were the two methods that were considered viable by the FS/CAP.

The FS/CAP proposes the use of surfactant-enhanced LNAPL recovery to remove NAPL from well MW-14. The proposed use of surfactant-enhanced LNAPL recovery in the manner proposed is not approved as a remedy for the site. In two previous directives (August 30, 2010 and December 29, 2010), ACEH has described the reasons that spot treatment in well MW-14 has limited usefulness for overall site remediation. Well MW-14 is screened within the shallow zone between depths of 5 to 15 feet bgs. Site contamination extends well below the bottom of well MW-14 to depths greater than 50 feet bgs. The highest dissolved concentrations are typically detected in the intermediate zone in wells that are screened below 30 feet bgs. As we have previously stated, the addition and recovery of surfactant to well MW-14 with the objective or preventing NAPL recurrence in well MW-14 is not an adequate scope for site remediation.

The FS/CAP considers surfactant-enhanced NAPL recovery and AS/SVE to have an equal likelihood for success to reduce contaminant mass in order for monitored natural attenuation to proceed at an acceptable rate. This seems improbable given the significantly different potentials for mass removal of the two alternatives. The surfactant-enhance recovery is limited to the uppermost zone of contamination in the immediate area of well MW-14. The available mass that potentially could be removed by this method is limited. An AS/SVE alternative would presumably treat a wider area and a larger vertical interval of the aquifer. The potential for reducing mass in

order for monitored natural attenuation to proceed at an acceptable rate appears to be much greater using AS/SVE. Therefore, AS/SVE would appear to be a more appropriate preferred alternative.

However, we do not object to the use of surfactant-enhanced recovery in a pilot test as an interim step to potentially remove NAPL prior to implementation of AS/SVE. In order for surfactant-enhanced recovery to be suitably evaluated in a pilot test, the scope of the proposed action would need to be expanded beyond well MW-14. Surfactant enhanced recovery may be acceptable as a pilot test prior to implementation of AS/SVE under the following expanded conditions:

- Installation of additional wells to monitor the effectiveness of the surfactant-enhanced recovery.
- Detailed spatial and temporal monitoring to evaluate the extent of outward migration of NAPL from the area and screen interval of well MW-14.
- Detailed estimations regarding the rate and volume of both injection and recovery.

To proceed with a pilot test using surfactant-enhanced recovery, please submit a Pilot Test Work Plan that addresses the comments in the three bullets listed above. A Pilot Test Work Plan similar to previous surfactant-enhanced recovery work plans that does not include adequate monitoring will be rejected. In the Pilot Test Work Plan, please include plans for longer term groundwater monitoring that incorporate the schedule for the surfactant-enhanced recovery pilot test.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Jerry Wickham), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

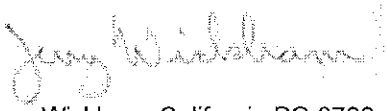
- **November 5, 2012** – Pilot Test Work Plan
  File to be named: WP_R_yyyy-mm-dd RO189

- **30 days following end of each quarter** – Groundwater Monitoring Reports
  File to be named: WP_R_yyyy-mm-dd RO3079

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.

If you have any questions, please call me at 510-567-6791 or send me an electronic mail message at jerry.wickham@acgov.org. Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

Sincerely,



Jerry Wickham, California PG 3766, CEG 1177, and CHG 297
Senior Hazardous Materials Specialist

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Danielle Stefani, Livermore Pleasanton Fire Department, 3560 Nevada St, Pleasanton, CA 94566 (*Sent via E-mail to: dstefani@lpfire.org*)

Colleen Winey (QIC 8021), Zone 7 Water Agency, 100 North Canyons Pkwy, Livermore, CA 94551 (*Sent via E-mail to: cwiney@zone7water.com*)

Kiersten Hoey, Conestoga-Rovers & Associates, 5900 Hollis Street, Suite A, Emeryville, CA 94608 (*Sent via E-mail to: khoey@craworld.com*)

Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)

GeoTracker, eFile

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

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

ELECTRONIC SUBMITTAL OF REPORTS

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

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

PERJURY STATEMENT

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

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

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

UNDERGROUND STORAGE TANK CLEANUP FUND

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

AGENCY OVERSIGHT

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

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

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

REQUIREMENTS

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

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

Submission Instructions

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

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

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

ATTACHMENT B:

GETTLER-RYAN BI-WEEKLY ABSORBENT SOCK CHANGE OUT FIELD LOGS AND SORBENT SOCK PHOTOGRAPHS

GETTLER-RYAN INC.

TRANSMITTAL

June 7, 2012
G-R #385867

TO: Ms. Kiersten Hoey
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out Event of May 30, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**

Site Address: **930 Springtown Blvd.**

City: **Livermore, CA**

Job #: **385867**

Event Date: 5/30/12

Sampler: JD

WELL ID	Vault Frame Condition	Gasket/O-Ring *(M) Missing (R) Replaced*	BOLTS *(M) Missing (R) Replaced*	Bolt Flanges *B=Broken S=Stripped R=Retap*	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal *(Deficient) inches from TOC*	Casing *(Condition prevents tight cap seal)*	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT *Manufacture/Size/ # of Bolts*	Pictures Taken Y / N
MW-14	ok	—	—	—	—	—	—	—	—	12" emw	—

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: J. Herrera	Date: 5/29/12	Project Number: 21253
Site Address: 930 Springtown Blvd Livermore CA	Well ID: MW-14	Weather: clear

1) Time absorbent sock removed from well for inspection: N/A

2) Condition of sock:

a) Length of sock showing product saturation: N/A

b) Length of sock showing dryness:

c) Color of sock showing product saturation:

d) Weight of the removed sock:

e) Weight of a new/clean/dry sock: 10 oz

f) Difference in weight: (D-E) to 0.01 ounces. —

3) Picture of sock removed from well taken: ☐

4) Sock removed from well deposited into a waste drum: ☐

-Is drum labeled? How full is drum? (%)

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: 10.07

b) Depth to water: 10.38

c) Thickness of product: (b-a) .31

6) Size and type of sock installed 3" Soak ease

7) Comments: First sock installed

GETTLER-RYAN INC.

TRANSMITTAL

June 20, 2012
G-R #385867

TO: Ms. Kiersten Hoey
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out Event of June 14, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 6/14/12
Sampler: SB

WELL ID	Vault Frame Condition	Gasket/O-Ring *(M) Missing (R) Replaced*	BOLTS *(M) Missing (R) Replaced*	Bolt Flanges *B=Broken S=Stripped R=Retap*	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal *(Deficient) inches from TOC*	Casing *(Condition prevents tight cap seal)*	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT *Manufacture/Size/ # of Bolts*	Pictures Taken Y / N
MW-14	olc	—	—	—	—	—	—	✓	✓	12" emco	✓

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: J. Herzon	Date: 6/14/12	Project Number: 211253
Site Address: 930 Spinstan Blvd Livermore CA	Well ID: MW-14	Weather: Clear

1) Time absorbent sock removed from well for inspection: 1445

2) Condition of sock:

a) Length of sock showing product saturation: 29"

b) Length of sock showing dryness: 7"

c) Color of sock showing product saturation: tan

d) Weight of the removed sock: 30 oz

e) Weight of a new/clean/dry sock: 10 oz

f) Difference in weight: (D-E) to 0.01 ounces. 20 oz

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

-Is drum labeled? Yes How full is drum? (%) 1%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: 10.20

b) Depth to water: 10.36

c) Thickness of product: (b-a) .16

6) Size and type of sock installed 3"x36" New Pig

7) Comments: New Drum ~~missed~~ Left at site

GETTLER-RYAN INC.

TRANSMITTAL

June 27, 2012
G-R #385867

TO: Ms. Kiersten Hoey
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out Event of June 25, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 6 / 25 / 12
Sampler: HAIG KEVORK

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
MW-14	OK	→					→	N	N	EMCO - 12" / 2	Y

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: HAIG KB/ORK	Date: 6/25/12	Project Number: 385867 SS#211253
Site Address: 930 SPRINGTOWN BLVD., LIVERMORE, CA	Well ID: MW-14	Weather: SUNNY

1) Time absorbent sock removed from well for inspection: 1048

2) Condition of sock:

a) Length of sock showing product saturation: 7"

b) Length of sock showing dryness: 23"

c) Color of sock showing product saturation: VERY LIGHT BROWN

d) Weight of the removed sock: 25 oz

e) Weight of a new/clean/dry sock: 9.25 oz

f) Difference in weight: (D-E) to 0.01 ounces. 15.75 oz

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

(-Is drum labeled? YES START DATE: 6/14/12) How full is drum? (%) 10 %

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: 10.40'

b) Depth to water: 10.44'

c) Thickness of product: (b-a) 0.04'

6) Size and type of sock installed P.I.G. SUMP SKIMMERSOCK 30" X 3"

7) Comments: DRUM HAS 2 USED ABSORBENT SOCK & MISQUEEN.

GETTLER-RYAN INC.

TRANSMITTAL

July 24, 2012
G-R #385867

TO: Ms. Kiersten Hoey
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out Event of July 11, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 7/11/12
Sampler: JB

WELL ID	Vault Frame Condition	Gasket/O-Ring *(M) Missing (R) Replaced*	BOLTS *(M) Missing (R) Replaced*	Bolt Flanges *B=Broken S=Stripped R=Retap*	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal *(Deficient) inches from TOC*	Casing *(Condition prevents tight cap seal)*	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT *Manufacture/Size/ # of Bolts*	Pictures Taken Y / N
MW-14	OK							Y	Y	12" Emco	Y

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: J. Herron	Date: 7/11/12	Project Number: 211253
Site Address: 930 Spring Garden Rd Livermore CA	Well ID: MW-14	Weather: Clear / Hot

1) Time absorbent sock removed from well for inspection: 1645

2) Condition of sock:

a) Length of sock showing product saturation: 6"

b) Length of sock showing dryness: 30"

c) Color of sock showing product saturation: Grey / Black

d) Weight of the removed sock: 31.5 oz

e) Weight of a new/clean/dry sock: 10 oz

f) Difference in weight: (D-E) to 0.01 ounces. 21.5 oz

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

-Is drum labeled? Yes How full is drum? (%) 2%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: 10.46

b) Depth to water: 10.52

c) Thickness of product: (b-a) .06

6) Size and type of sock installed 3" x 36" Soak ease

7) Comments: _____

GETTLER-RYAN INC.

TRANSMITTAL

July 26, 2012
G-R #385867

TO: Ms. Kiersten Hoey
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out Event of July 24, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 7/24/12
Sampler: JH

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
~~MW-2~~											
MW-14	OK	—					→	N	Y	12" emco	Y

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: J. Herrera	Date: 7/24/12	Project Number: 211253
Site Address: 930 Spring Trail Livermore CA	Well ID: MW-14	Weather: clear

1) Time absorbent sock removed from well for inspection: 1015

2) Condition of sock:

a) Length of sock showing product saturation: 6"

b) Length of sock showing dryness: 30"

c) Color of sock showing product saturation: Grey / Black

d) Weight of the removed sock: 17.2 oz

e) Weight of a new/clean/dry sock: 10 oz

f) Difference in weight: (D-E) to 0.01 ounces. 7.2 oz

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

-Is drum labeled? Yes How full is drum? (%) 20%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: 10.68

b) Depth to water: 10.70

c) Thickness of product: (b-a) .02

6) Size and type of sock installed 3" x 36" soakease

7) Comments: _____

GETTLER-RYAN INC.

TRANSMITTAL

August 15, 2012
G-R #385867

TO: Ms.Tina Hariu
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out Event of August 8, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

6747 Sierra Court, Suite J • **Dublin**, CA 94568 • (925) 551-7555 • Fax (925) 551-7888
3140 Gold Camp Drive, Suite 170 • **Rancho Cordova**, CA 95670 • (916) 631-1300 • Fax (916) 631-1317

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253** Job #: **385867**

Site Address: **930 Springtown Blvd.** Event Date: 8/8/12

City: **Livermore, CA** Sampler: JD

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
MW-14	ok	—	—	—	—	—	—	Y	Y	12" emco	Y

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: J. Herrera	Date: 8/8/12	Project Number: 211253
Site Address: 930 Springtown Blvd Livermore CA	Well ID: MW-14	Weather: clear

1) Time absorbent sock removed from well for inspection: 1220

2) Condition of sock:

a) Length of sock showing product saturation: 18"

b) Length of sock showing dryness: 18"

c) Color of sock showing product saturation: tan - Gray

d) Weight of the removed sock: 18.3 oz

e) Weight of a new/clean/dry sock: 11 oz

f) Difference in weight: (D-E) to 0.01 ounces. 7.3 oz

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

-Is drum labeled? Yes How full is drum? (%) 15%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: 13.71

b) Depth to water: 13.74

c) Thickness of product: (b-a) .03

6) Size and type of sock installed 3" X 36" Soakease

7) Comments: _____

GETTLER-RYAN INC.

TRANSMITTAL

August 29, 2012
G-R #385867

TO: Ms. Tina Hariu
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out and Third Quarter Event of August 22, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

pg. 1 of 2

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 8.22.12
Sampler: ML

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
MW-11	OK							NO	NO	ENCO/12"/2	NO
MW-12	OK										
MW-13	OK										
MW-14	OK										
MW-15	OK										
MW-16	OK										
MW-18	OK										

Comments

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253** Job #: **385867**

Site Address: **930 Springtown Blvd.** Event Date: 8.22.12

City: **Livermore, CA** Sampler: FT

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y (N)	REPLACE CAP Y (N)	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y (N)
MW-9	OK	OK	OK	OK	OK	OK	OK			Emco | 12" | 2	
MW-10	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
MW-17	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
MW-19	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
MW-20	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	

Comments

STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. (GR) field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. All work is performed in accordance with the GR Health & Safety Plan and all client-specific programs. The scope of work and type of analysis to be performed is determined prior to commencing field work.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using an interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, all depth to water level measurements are collected with a static water level indicator and are also recorded in the field notes, prior to purging and sampling any wells.

After water levels are collected and prior to sampling, if purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, peristaltic or Grundfos), or disposable bailers. Temperature, pH and electrical conductivity are measured a minimum of three times during the purging (additional parameters such as dissolved oxygen, oxidation reduction potential, turbidity may also be measured, depending on specific scope of work.). Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards, as directed by the scope of work. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

As requested by Chevron Environmental Management Company, the purge water and decontamination water generated during sampling activities is transported by Clean Harbors Environmental Services to Evergreen Oil located in Newark, California.

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8.22.12 (inclusive)
City: Livermore, CA Sampler: FT

Well ID MW-9 Date Monitored: 8.22.12
Well Diameter 4
Total Depth 14.47 ft.
Depth to Water 13.45 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

1.02 xVF .66 = .67 x3 case volume = Estimated Purge Volume: 2.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.65

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Suction Pump		Peristaltic Pump	
Grundfos		QED Bladder Pump	
Peristaltic Pump		Other:	
QED Bladder Pump			
Other:			

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1200 Weather Conditions: SUNNY
Sample Time/Date: 1230 / 8.22.12 Water Color: GRY. Odor: (Y) / N STRONG
Approx. Flow Rate: ~ gpm. Sediment Description: S. SILTY
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 13.45

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µmhos/cm - µS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1204	.75	7.17	780	20.1	PRE: 1.5	PRE: -18
1208	1.5	7.15	785	19.9		
1212	2.0	7.13	789	19.7		
					POST: 1.4	POST: -34

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-9	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Add/Replaced Bolt:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 | Job Number: 385867
Site Address: 930 Springtown Blvd. | Event Date: 8.22.12 (inclusive)
City: Livermore, CA | Sampler: FT

Well ID: MW-10 | Date Monitored: 8.22.12
Well Diameter: 4
Total Depth: 26.44 ft.
Depth to Water: 13.03 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

13.41 xVF .66 = 8.85 x3 case volume = Estimated Purge Volume: 27.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 15.71

Purge Equipment:
- Disposable Bailer: ____
- Stainless Steel Bailer: ____
- Stack Pump: ✓
- Suction Pump: ____
- Grundfos: ____
- Peristaltic Pump: ____
- QED Bladder Pump: ____
- Other: ____

Sampling Equipment:
- Disposable Bailer: ✓
- Pressure Bailer: ____
- Metal Filters: ____
- Peristaltic Pump: ____
- QED Bladder Pump: ____
- Other: ____

Time Started: ____ (2400 hrs)
Time Completed: ____ (2400 hrs)
Depth to Product: ____ ft
Depth to Water: ____ ft
Hydrocarbon Thickness: ____ ft
Visual Confirmation/Description: ____
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ____ gal
Amt Removed from Well: ____ gal
Water Removed: ____

Start Time (purge): 1130 | Weather Conditions: SUNNY
Sample Time/Date: 1245 / 8.22.12 | Water Color: CLEAN | Odor: (Y) / N SLIGHT
Approx. Flow Rate: 1.5 gpm. | Sediment Description: NONE
Did well de-water? YES If yes, Time: 1138 Volume: 11.0 gal. DTW @ Sampling: 13.20

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µmhos/cm - µS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1136	9.0	7.20	696	19.2	PRE: 1.7	PRE: 64
					POST: 1.6	POST: 58

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-10	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS: ____

Add/Replaced Lock: ____ Add/Replaced Plug: ____ Add/Replaced Bolt: ____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8-22-12 (inclusive)
City: Livermore, CA Sampler: ML

Well ID MW-11 Date Monitored: 8-22-12
Well Diameter 4
Total Depth 14.62 ft.
Depth to Water 13.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

1.12 xVF .66 = 0.7 x3 case volume = Estimated Purge Volume: 2.1 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.72

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	X	Disposable Bailer	X
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Suction Pump		Peristaltic Pump	
Grundfos		QED Bladder Pump	
Peristaltic Pump		Other:	
QED Bladder Pump			
Other:			

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1230 Weather Conditions: SUNNY
Sample Time/Date: 1300 / 8-22-12 Water Color: Clear Odor: Y / (N)
Approx. Flow Rate: — gpm. Sediment Description: none
Did well de-water? NO If yes, Time: _____ Volume: _____ gal. DTW @ Sampling: 13.61

Time (2400 hr.)	Volume (gal.)	pH	Conductivity ~~(µmhos/cm~~ mS ~~µS)~~	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1235	0.75	7.12	1.33	24.0	PRE: 1.7	PRE: -72
1240	1.5	7.08	1.30	23.9		
1245	2.25	7.09	1.30	23.8		
					POST: 1.4	POST: -70

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-11	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS: Slow RECOVERY

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8-22-12 (inclusive)
City: Livermore, CA Sampler: MC

Well ID MW-12 Date Monitored: 8-22-12
Well Diameter 4
Total Depth 26.68 ft.
Depth to Water 13.44 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

13.24 xVF .66 = 8.7 x3 case volume = Estimated Purge Volume: 26.1 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 16.08

Purge Equipment:		Sampling Equipment:	
Disposable Bailer		Disposable Bailer	X
Stainless Steel Bailer		Pressure Bailer	
Stack Pump	X	Metal Filters	
Suction Pump		Peristaltic Pump	
Grundfos		QED Bladder Pump	
Peristaltic Pump		Other:	
QED Bladder Pump			
Other:			

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1325 Weather Conditions: SUNNY
Sample Time/Date: 1400 / 8-22-12 Water Color: Cloudy Odor: Y / N Light
Approx. Flow Rate: 2 gpm. Sediment Description: Light
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 13.51

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (mmhos/cm - uS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1329	8	7.83	1.05	22.9	PRE: 1.7	PRE: -120
1333	16	7.77	1.01	22.5		
1338	28	7.76	1.00	22.4		
					POST: 1.4	POST: -118

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-12	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Add/Replaced Bolt:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: **Chevron #211253** Job Number: **385867**
Site Address: **930 Springtown Blvd.** Event Date: 8-22-12 (inclusive)
City: **Livermore, CA** Sampler: ML

Well ID **MW-13** Date Monitored: 8-22-12
Well Diameter 4
Total Depth 36.65 ft.
Depth to Water 13.19 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

23.46 xVF 1.66 = 15.4 x3 case volume = Estimated Purge Volume: 46.2 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 17.88

Purge Equipment:

Disposable Bailer	
Stainless Steel Bailer	
Stack Pump	X
Suction Pump	
Grundfos	
Peristaltic Pump	
QED Bladder Pump	
Other:	

Sampling Equipment:

Disposable Bailer	X
Pressure Bailer	
Metal Filters	
Peristaltic Pump	
QED Bladder Pump	
Other:	

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1420 Weather Conditions: SUNNY
Sample Time/Date: 1455 / 8-22-12 Water Color: GRAY Odor: Y / N medium
Approx. Flow Rate: 3 gpm. Sediment Description: Light
Did well de-water? NO If yes, Time: _____ Volume: _____ gal. DTW @ Sampling: 13.42

Time (2400 hr.)	Volume (gal.)	pH	Conductivity ~~(µmhos/cm)~~ MS (µS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1425	15	7.45	1.25	22.5	PRE: 1.5	PRE: -72
1430	30	7.37	1.31	22.1		
1436	48	7.38	1.22	22.0		
					POST: 1.3	POST: -66

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-13	4 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8-22-12 (inclusive)
City: Livermore, CA Sampler: ML

Well ID MW-14 Date Monitored: 8-22-12
Well Diameter 4
Total Depth 14.41 ft.
Depth to Water 10.78 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

3.63 xVF .66 = 2.3 x3 case volume = Estimated Purge Volume: 6.9 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.50

Purge Equipment:
Disposable Bailer X
Stainless Steel Bailer
Stack Pump
Suction Pump
Grundfos
Peristaltic Pump
QED Bladder Pump
Other:

Sampling Equipment:
Disposable Bailer X
Pressure Bailer
Metal Filters
Peristaltic Pump
QED Bladder Pump
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: 0 ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1140 Weather Conditions: SUNNY
Sample Time/Date: 1215 / 8-22-12 Water Color: GRAY Odor: Y / N VERY STRONG
Approx. Flow Rate: - gpm. Sediment Description: LIGHT
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 11.02

Time (2400 hr.)	Volume (gal.)	pH	Conductivity ~~(umhos/cm - uS)~~ mS	Temperature (C) F	D.O. (mg/L)	ORP (mV)
1146	2.5	7.15	1.69	24.1	PRE: 1.0	PRE: -122
1153	5	7.09	1.63	23.6		
1159	7	7.08	1.63	23.5		
					POST: 0.9	POST: -116

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-14	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Add/Replaced Bolt:

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: MIKE LOMBARD	Date: 8-22-12	Project Number: 211253
Site Address: 930 SPRINGTOWN BLVD, LIVERMORE, CA 94550	Well ID: MW-14	Weather: SUNNY

1) Time absorbent sock removed from well for inspection: 0900

2) Condition of sock:

a) Length of sock showing product saturation: 12"

b) Length of sock showing dryness: 26"

c) Color of sock showing product saturation: LIGHT BROWN

d) Weight of the removed sock: 14.37 OZ.

e) Weight of a new/clean/dry sock: 9.08 OZ.

f) Difference in weight: (D-E) to 0.01 ounces. 5.29 OZ.

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

-Is drum labeled? YES How full is drum? (%) 40%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: —

b) Depth to water: 10.78

c) Thickness of product: (b-a) —

6) Size and type of sock installed 36" SOAKEASE

7) Comments: AFTER WAITING 30 MINUTES TO MEASURE DTW/PRODUCT AFTER SOCK REMOVAL, FOUND NO PRODUCT PRESENT. DOUBLE CHECKED WITH →

DISPOSABLE BAILER, NO PRODUCT PRESENT.

MW-14, 211253, 8-22-12

PG. 2

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING
FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8/22.12 (inclusive)
City: Livermore, CA Sampler: ML

Well ID MW- 15 Date Monitored: 8-22-12
Well Diameter 4
Total Depth 45.90 ft.
Depth to Water 10.87 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

35.03 xVF .66 = 23.1 x3 case volume = Estimated Purge Volume: 69.30 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 17.87

Purge Equipment:
Disposable Bailer
Stainless Steel Bailer
Stack Pump X
Suction Pump
Grundfos
Peristaltic Pump
QED Bladder Pump
Other:

Sampling Equipment:
Disposable Bailer X
Pressure Bailer
Metal Filters
Peristaltic Pump
QED Bladder Pump
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1000 Weather Conditions: SUNNY
Sample Time/Date: 1040 / 8.22.12 Water Color: Clear Odor: Y / (N)
Approx. Flow Rate: 3 gpm. Sediment Description: None
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 11.12

Time (2400 hr.)	Volume (gal.)	pH	Conductivity ~~(µmhos/cm)~~ mS	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1008	24	7.21	1.55	21.4	PRE: 1.2	PRE: 46
1016	48	7.16	1.50	20.7		
1024	72	7.17	1.51	20.5		
					POST: 1.0	POST: 51

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW- 15	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Add/Replaced Bolt:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: **Chevron #211253** Job Number: **385867**
Site Address: **930 Springtown Blvd.** Event Date: 8-22-12 (inclusive)
City: **Livermore, CA** Sampler: MC

Well ID MW-16 Date Monitored: 8-22-12
Well Diameter 4
Total Depth 29.19 ft.
Depth to Water 11.08 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

18.11 xVF .66 = 11.9 x3 case volume = Estimated Purge Volume: 35.7 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 14.70

Purge Equipment:
Disposable Bailer ____
Stainless Steel Bailer ____
Stack Pump X
Suction Pump ____
Grundfos ____
Peristaltic Pump ____
QED Bladder Pump ____
Other: ____

Sampling Equipment:
Disposable Bailer X
Pressure Bailer ____
Metal Filters ____
Peristaltic Pump ____
QED Bladder Pump ____
Other: ____

Time Started: ____ (2400 hrs)
Time Completed: ____ (2400 hrs)
Depth to Product: ____ ft
Depth to Water: ____ ft
Hydrocarbon Thickness: ____ ft
Visual Confirmation/Description: ____
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ____ gal
Amt Removed from Well: ____ gal
Water Removed: ____

Start Time (purge): 1525 Weather Conditions: Sunny
Sample Time/Date: 1600 8-22-12 Water Color: Cloudy Odor: Y / (N)
Approx. Flow Rate: 2 gpm. Sediment Description: none
Did well de-water? no If yes, Time: ____ Volume: ____ gal. DTW @ Sampling: 11.42

Time (2400 hr.)	Volume (gal.)	pH	Conductivity ~~(umhos/cm)~~ mS	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1531	12	7.08	1.27	24.1	PRE: 1.6	PRE: 27
1537	24	7.02	1.24	23.4		
1543	36	7.03	1.22	23.2		
					POST: 1.5	POST: 23

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-16	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS: ____

Add/Replaced Lock: ____ Add/Replaced Plug: ____ Add/Replaced Bolt: ____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING
FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8.22.12 (inclusive)
City: Livermore, CA Sampler: FT

Well ID MW-17 Date Monitored: 8.22.12
Well Diameter 4
Total Depth 37.08 ft.
Depth to Water 14.54 ft. ☐ Check if water column is less then 0.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

22.54 xVF .66 = 14.87 x3 case volume = Estimated Purge Volume: 45.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 19.04

Purge Equipment:
Disposable Bailer
Stainless Steel Bailer
Stack Pump ✓
Suction Pump
Grundfos
Peristaltic Pump
QED Bladder Pump
Other:

Sampling Equipment:
Disposable Bailer ✓
Pressure Bailer
Metal Filters
Peristaltic Pump
QED Bladder Pump
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1000 Weather Conditions: SUNNY
Sample Time/Date: 1115 / 8.22.12 Water Color: CLEAR Odor: Y / (N)
Approx. Flow Rate: 2.5 gpm. Sediment Description: NONE
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 18.40

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µmhos/cm - µS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1006	15.0	7.35	591	19.7	PRE: 1.9	PRE: 94
1012	30.0	7.32	598	19.9		
1018	45.0	7.29	604	20.1		
					POST: 1.7	POST: 102

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-17	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Add/Replaced Bolt:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8-22-12 (inclusive)
City: Livermore, CA Sampler: ML

Well ID MW-18 Date Monitored: 8-22-12
Well Diameter 4
Total Depth 14.90 ft.
Depth to Water 12.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

2.40 xVF .66 = 1.5 x3 case volume = Estimated Purge Volume: 4.5 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.98

Purge Equipment:
Disposable Bailer X
Stainless Steel Bailer
Stack Pump
Suction Pump
Grundfos
Peristaltic Pump
QED Bladder Pump
Other:

Sampling Equipment:
Disposable Bailer X
Pressure Bailer
Metal Filters
Peristaltic Pump
QED Bladder Pump
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1055 Weather Conditions: SUNNY
Sample Time/Date: 1125 / 8-22-12 Water Color: GRAY Odor: (Y) N STRONG
Approx. Flow Rate: — gpm. Sediment Description: Light
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 12.60

Time (2400 hr.)	Volume (gal.)	pH	Conductivity ~~umhos/cm~~ mS	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1100	1.5	7.21	1.83	23.0	PRE: 1.2	PRE: -56
1105	3	7.18	1.80	22.8		
1110	4.5	7.18	1.81	22.8		
					POST: 1.1	POST: -61

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-18	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Add/Replaced Bolt:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8.22.12 (inclusive)
City: Livermore, CA Sampler: FT

Well ID MW-19 Date Monitored: 8.22.12
Well Diameter 4
Total Depth 14.91 ft.
Depth to Water 12.80 ft. ☐ Check if water column is less then 0.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

2.11 xVF .66 = 1.39 x3 case volume = Estimated Purge Volume: 4.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.22

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Suction Pump		Peristaltic Pump	
Grundfos		QED Bladder Pump	
Peristaltic Pump		Other:	
QED Bladder Pump			
Other:			

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1300 Weather Conditions: SUNNY
Sample Time/Date: 1400 / 8.22.12 Water Color: GRY. Odor: Ⓨ / N MODERATE
Approx. Flow Rate: ✓ gpm. Sediment Description: S. SILTY
Did well de-water? YES If yes, Time: 1308 Volume: 2.0 gal. DTW @ Sampling: 12.90

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µmhos/cm - µS)	Temperature (Ⓒ / F)	D.O. (mg/L)	ORP (mV)
1305	1.5	7.26	785	19.7	PRE: 1.6	PRE: -39
	3.0					
	4.0					
					POST: 1.7	POST: -58

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-19	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #211253 Job Number: 385867
Site Address: 930 Springtown Blvd. Event Date: 8.22.12 (inclusive)
City: Livermore, CA Sampler: FT

Well ID MW-20 Date Monitored: 8.22.12
Well Diameter 4
Total Depth 14.94 ft.
Depth to Water 10.12 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

4.82 xVF .66 = 3.18 x3 case volume = Estimated Purge Volume: 10.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.08

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Suction Pump		Peristaltic Pump	
Grundfos		QED Bladder Pump	
Peristaltic Pump		Other:	
QED Bladder Pump			
Other:			

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:

Start Time (purge): 1335 Weather Conditions: SUNNY
Sample Time/Date: 1430 / 8.22.12 Water Color: GRY. Odor: (Y) / N STRONG
Approx. Flow Rate: / gpm. Sediment Description: S. SILTY
Did well de-water? YES If yes, Time: 1350 Volume: 5.0 gal. DTW @ Sampling: 10.17

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µmhos/cm - µS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1345	3.5	7.31	782	19.9	PRE: 1.7	PRE: -48
					POST: 1.6	POST: -25

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-20	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX(8260)
	2 x voa vial	YES	HCL	LANCASTER	METHANE (8015)
	1 x 250ml amber	YES	HCL	LANCASTER	FERROUS IRON (SM20 3500 Fe B)
	2 x voa vial	YES	NP	LANCASTER	NITRATE/SULFATE (EPA 300.0)

COMMENTS:

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. #: _____ Sample # _____ Group #: 010228

Analyses Requested

Preservation Codes

Facility #: SS#211253-OML G-R#385867 Global ID#T0600101353

Site Address: 930 SPRINGTOWN BLVD., LIVERMORE, CA

Chevron PM: CM CRATH Hariu

Lead Consultant: G-R, Inc., 6747 Sierra Court, Suite J, Dublin, CA 94568

Consultant/Office: Deanna L. Harding (deanna@grinc.com)

Consultant Prj. Mgr.: _____

Consultant Phone #: 925-551-7555 Fax #: 925-551-7899

Sampler: MIKE L. FRANK T.

Matrix

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air	Total Number of Containers	BTEX + MTBE 8260 ☐ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup	8260 full scan	Oxygenates ___ Method ___	Total Lead Method ___	Dissolved Lead Method ___	Nitrate/Sulfate	Ferrous IRON	H
[illegible]	[illegible]																	
MW-9	8-22-12	1230	X			X		3								X	X	
MW-10		1215	X			X		3								X	X	
MW-11		1300	X			X		3								X	X	
MW-12		1400	X			X		3								X	X	
MW-13		1155	X			X		3								X	X	
MW-14		1215	X			X		3								X	X	
MW-15		1040	X			X		3								X	X	
MW-16		1600	X			X		3								X	X	
MW-17		1115	X			X		3								X	X	
MW-18		1125	X			X		3								X	X	
MW-19		1400	X			X		3								X	X	
MW-20		1430	X			X		3								X	X	

Preservative Codes

H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks

Please forward the lab results directly to the Lead Consultant and cc: G-R.

Turnaround Time Requested (TAT) (please circle)

STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)

QC Summary Type I - Full EDF/EDD
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	8-22-12	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other _____			Received by:	Date	Time
Temperature Upon Receipt _____ C°			Custody Seals Intact? Yes No		

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. #: _____ Sample # _____ Group #: 010229

Ø82412-Ø2

Facility #: SS#211253-OML G-R#385867 Global ID#T0600101353

Site Address: 930 SPRINGTOWN BLVD., LIVERMORE, CA

Chevron PM: CM Lead Consultant: CRATH Hariu

Consultant/Office: G-R, Inc., 6747 Sierra Court, Suite J, Dublin, CA 94568

Consultant Prj. Mgr.: Deanna L. Harding (deanna@grinc.com)

Consultant Phone #: 925-551-7555 Fax #: 925-551-7899

Sampler: Mike L. Frank T.

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

- ☐ J value reporting needed
- ☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
- ☐ Confirm highest hit by 8260
- ☐ Confirm all hits by 8260
- ☐ Run ____ oxy's on highest hit
- ☐ Run ____ oxy's on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water	Oil ☐ Air	Total Number of Containers	BTEX + ~~MTBE~~ 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup	8260 full scan	Oxygenates	Total Lead Method	Dissolved Lead Method	METHANE
QA	8-21-12		X			X		2	X	X						
MW-9		1230	X			X		8	X	X						X
MW-10		1245	X			X		8	X	X						X
MW-11		1300	X			X		8	X	X						X
MW-12		1400	X			X		8	X	X						X
MW-13		1455	X			X		8	X	X						X
MW-14		1215	X			X		8	X	X						X
MW-15		1040	X			X		8	X	X						X
MW-16		1600	X			X		8	X	X						X
MW-17		1115	X			X		8	X	X						X
MW-18		1125	X			X		8	X	X						X
MW-19		1400	X			X		8	X	X						X
MW-20		1430	X			X		8	X	X						X

Comments / Remarks

Please forward the lab results directly to the Lead Consultant and cc. G-R

Turnaround Time Requested (TAT) (please circle)

STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)

QC Summary Type I - Full EDF/EDD
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

	Date	Time		Date	Time
Relinquished by:	8-24-12	0730	Received by:	8/24/12	
Relinquished by:	8/24/12	1330	Received by:	8/24/12	1330
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	Date	Time
Temperature Upon Receipt ____ C°			Custody Seals Intact? Yes No		

GETTLER-RYAN INC.

TRANSMITTAL

September 11, 2012
G-R #385867

TO: Ms. Tina Hariu
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out of September 4, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 9/4/12
Sampler: GM

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
MW-14	OK	←					→	N	N	EMCO/12/2	N

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: G. MEDINA	Date: 9/4/12	Project Number:
Site Address: 930 SPRINGTOWN BLVD LIVERMORE CA	Well ID: MW-14	Weather: CLOUDY COLD

1) Time absorbent sock removed from well for inspection: 0610

2) Condition of sock:

a) Length of sock showing product saturation: 3"

b) Length of sock showing dryness: 34"

c) Color of sock showing product saturation: GRAYISH

d) Weight of the removed sock: 12 1/8 OZ

e) Weight of a new/clean/dry sock: 9 5/8 OZ

f) Difference in weight: (D-E) to 0.01 ounces. 2 1/2 OZ

3) Picture of sock removed from well taken: [Y]

4) Sock removed from well deposited into a waste drum: [Y]

-Is drum labeled? YES How full is drum? (%) 50%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: ND

b) Depth to water: 10.82

c) Thickness of product: (b-a) 0

6) Size and type of sock installed 3" SOAKEASE

7) Comments: _____

GETTLER-RYAN INC.

TRANSMITTAL

September 25, 2012
G-R #385867

TO: Ms. Tina Hariu
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out of September 21, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253** Job #: **385867**

Site Address: **930 Springtown Blvd.** Event Date: 9-21-12

City: **Livermore, CA** Sampler: ML

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
MW-14	OK	→	→	→	→	→	→	NO	NO	EMCO 12" / 2	NO

Comments

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: Mike L.	Date: 9-21-12	Project Number: 211253
Site Address: 930 Springtown Blvd. Livermore, CA 94550	Well ID: MW-14	Weather: SUNNY

1) Time absorbent sock removed from well for inspection: 1030

2) Condition of sock:

a) Length of sock showing product saturation: NONE

b) Length of sock showing dryness: 31"

c) Color of sock showing product saturation: NONE

d) Weight of the removed sock: 11 oz.

e) Weight of a new/clean/dry sock: 9 oz.

f) Difference in weight: (D-E) to 0.01 ounces. 2.00 oz.

3) Picture of sock removed from well taken: ☒

4) Sock removed from well deposited into a waste drum: ☒

-Is drum labeled? Yes How full is drum? (%) ~50%

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: —

b) Depth to water: 10.69

c) Thickness of product: (b-a) 0

6) Size and type of sock installed 30" PIG

7) Comments: NO PRODUCT PRESENT IN WELL

GETTLER-RYAN INC.

TRANSMITTAL

October 12, 2012
G-R #385867

TO: Ms. Tina Hariu
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Former Texaco Service Station
930 Springtown Blvd.
Livermore, California
(Site #211253)

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Bi-weekly Absorbent Sock Change Out of October 2, 2012**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

Trans/211253

WELL CONDITION STATUS SHEET

Client/Facility #: **Chevron #211253**
Site Address: **930 Springtown Blvd.**
City: **Livermore, CA**

Job #: **385867**
Event Date: 10/2/12
Sampler: JV

WELL ID	Vault Frame Condition	Gasket/O-Ring (M) Missing (R) Replaced	BOLTS (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / N	REPLACE CAP Y / N	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y / N
MW-14	OK	—					—	~	~	12" emco	~

Comments

STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. (GR) field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. All work is performed in accordance with the GR Health & Safety Plan and all client-specific programs. The scope of work and type of analysis to be performed is determined prior to commencing field work.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using an interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, all depth to water level measurements are collected with a static water level indicator and are also recorded in the field notes, prior to purging and sampling any wells.

After water levels are collected and prior to sampling, if purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, peristaltic or Grundfos), or disposable bailers. Temperature, pH and electrical conductivity are measured a minimum of three times during the purging (additional parameters such as dissolved oxygen, oxidation reduction potential, turbidity may also be measured, depending on specific scope of work.). Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards, as directed by the scope of work. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

As requested by Chevron Environmental Management Company, the purge water and decontamination water generated during sampling activities is transported by Clean Harbors Environmental Services to Evergreen Oil located in Newark, California.

CONESTOGA-ROVERS & ASSOCIATES

SORBENT SOCK EVALUATION FORM

Name: J. Herrera	Date: 10/2/12	Project Number: 211253
Site Address: 930 Spring Tree Blvd Livermore CA	Well ID: MW-14	Weather: clear

1) Time absorbent sock removed from well for inspection: 1520

2) Condition of sock:

a) Length of sock showing product saturation: 0"

b) Length of sock showing dryness: 8"

c) Color of sock showing product saturation: brown

d) Weight of the removed sock: 16.5 oz

e) Weight of a new/clean/dry sock: 9.1 oz

f) Difference in weight: (D-E) to 0.01 ounces. 7.4 oz

3) Picture of sock removed from well taken: ☑

4) Sock removed from well deposited into a waste drum: ☑

-Is drum labeled? Yes How full is drum? (%)

5) After at least 15 minutes after removing the sock from the well, measure (to 0.01ft) from the top of the well casing. :

a) Depth to product: N/A

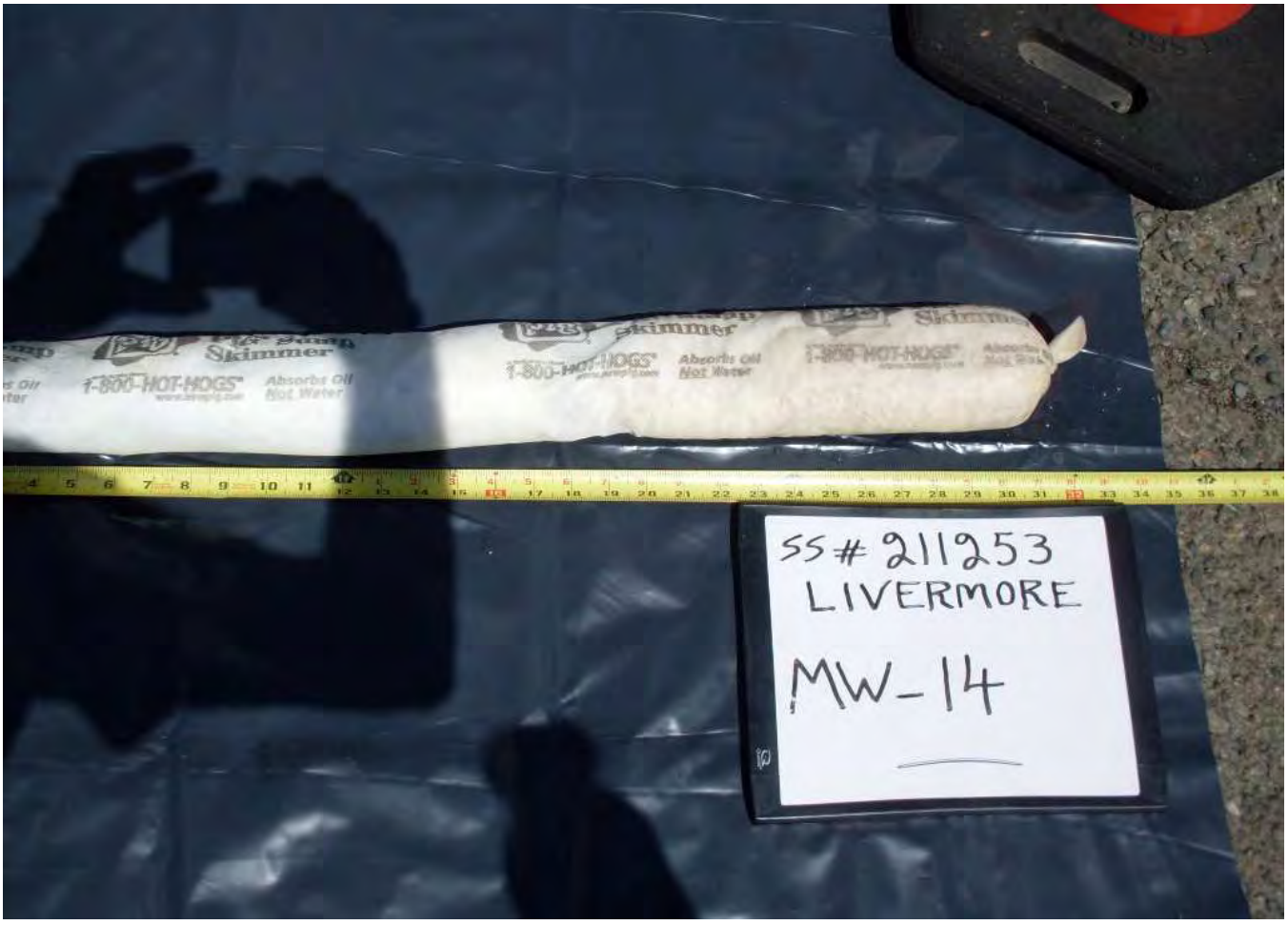
b) Depth to water: 10.65

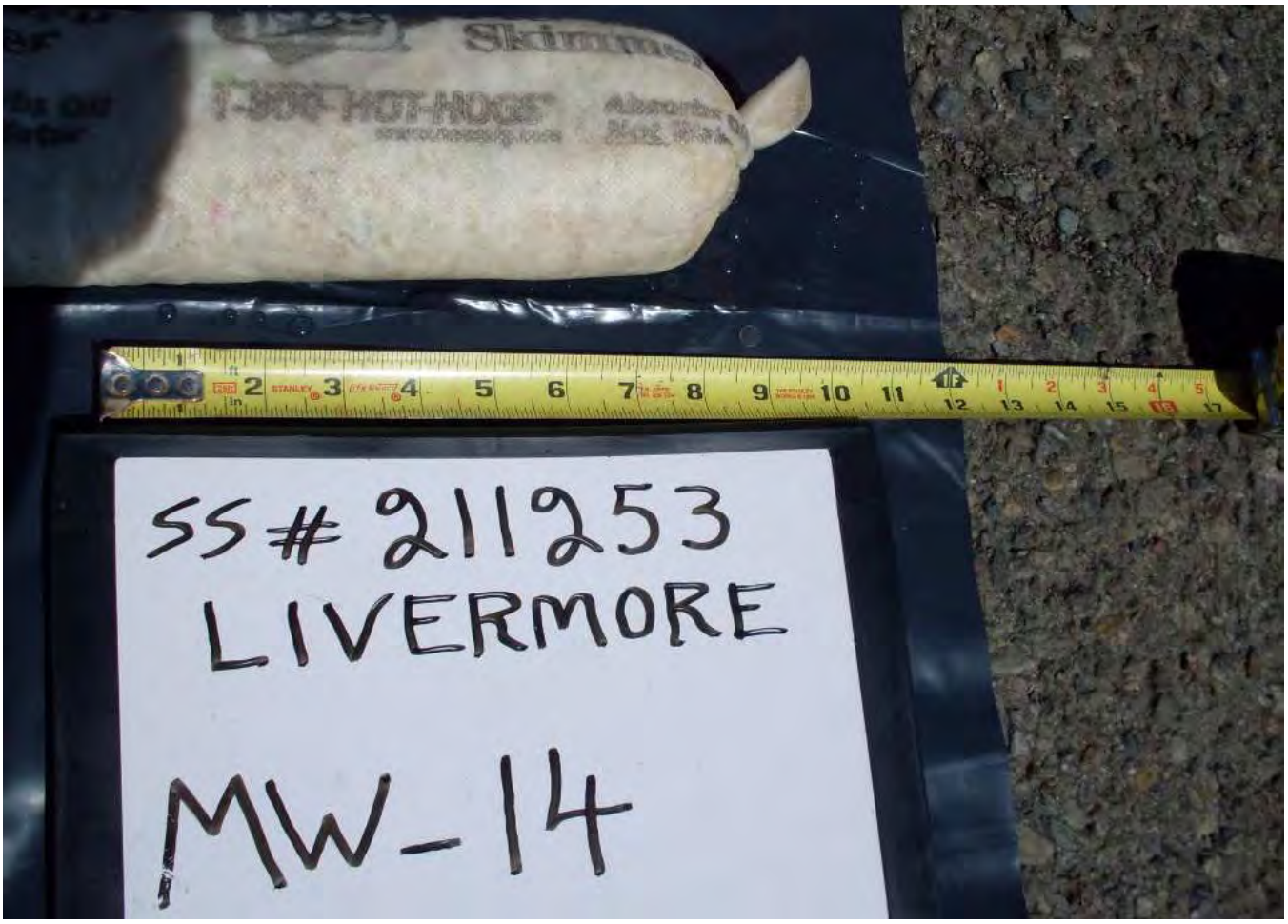
c) Thickness of product: (b-a) 0.00

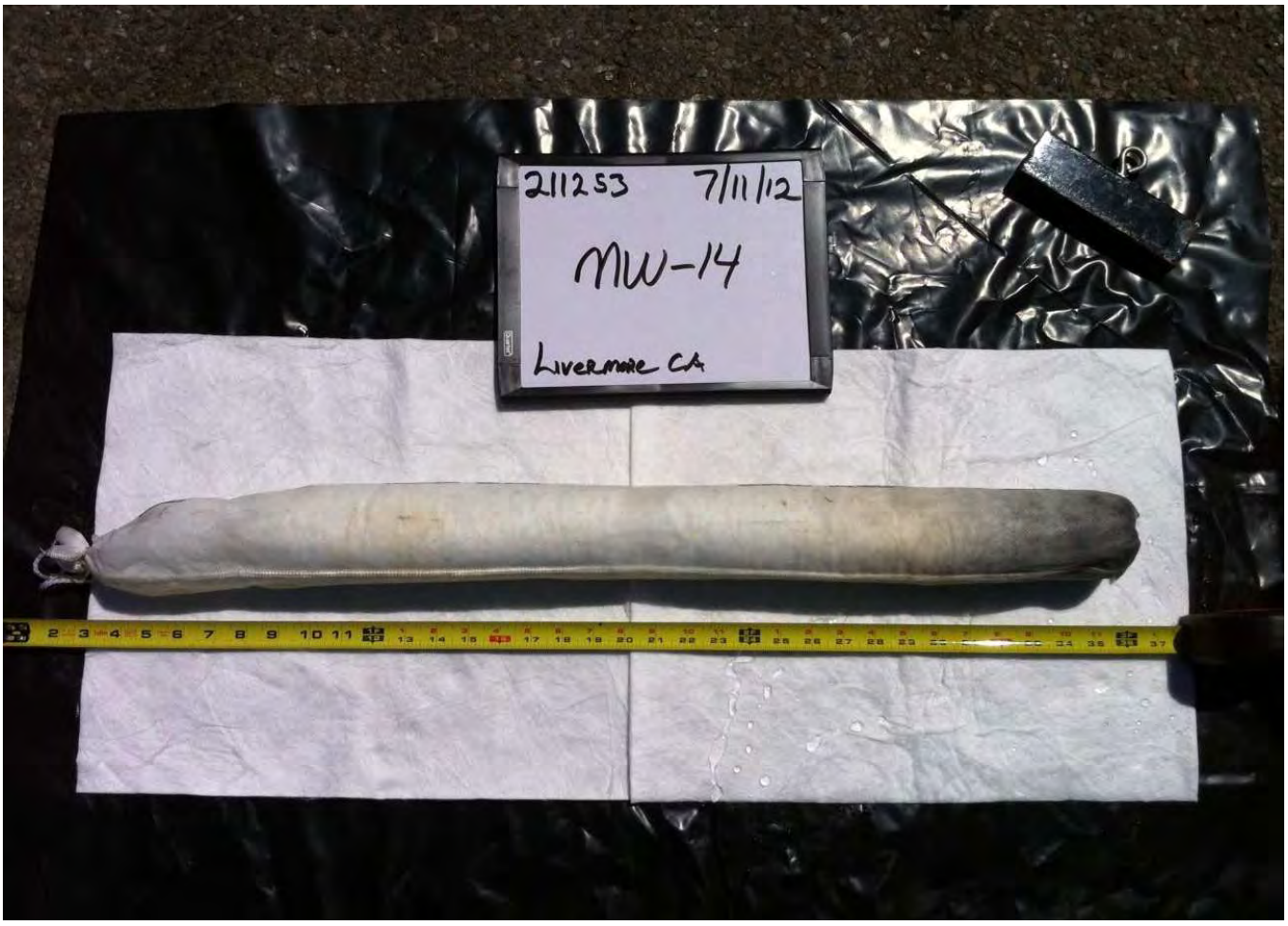
6) Size and type of sock installed 3" x 30" Pig

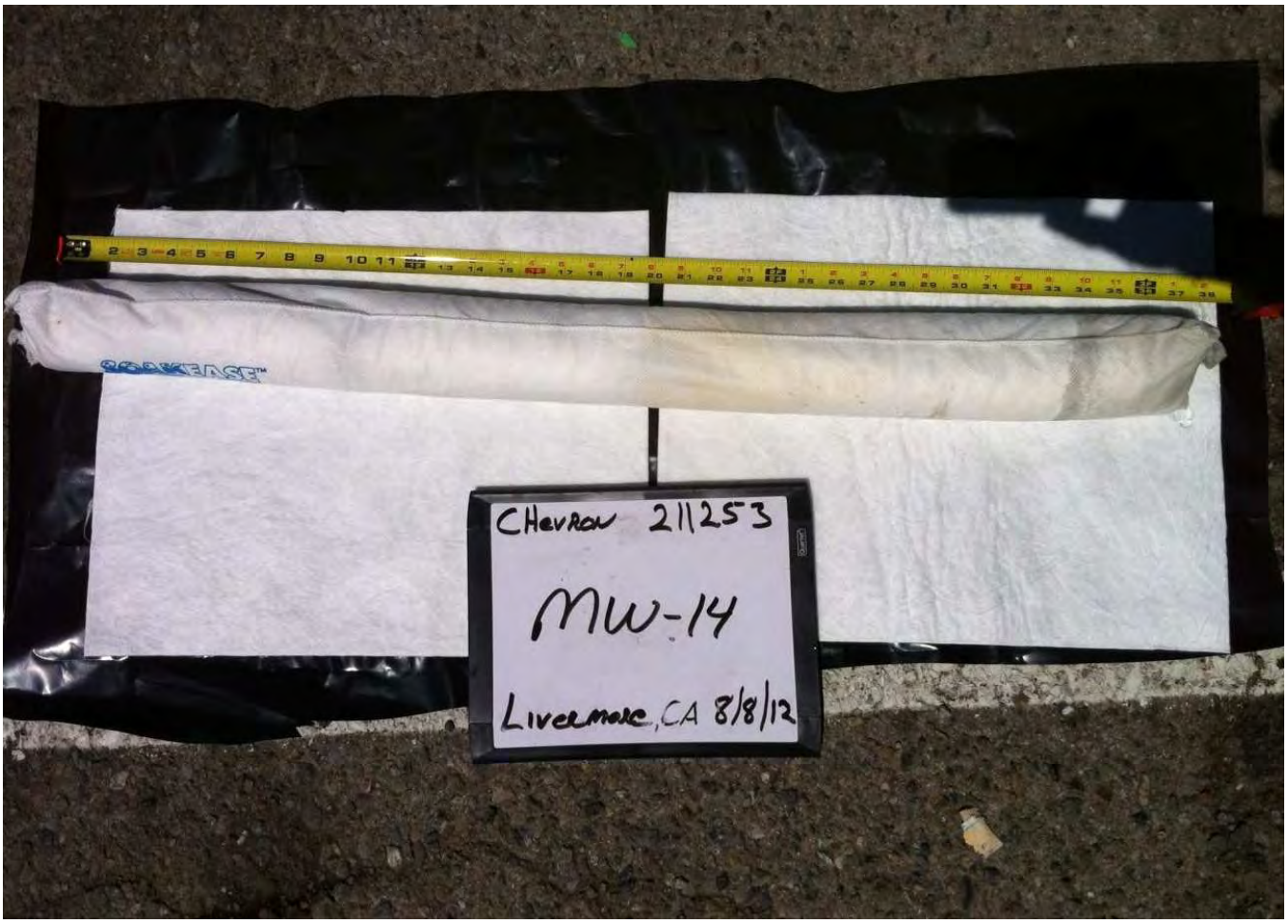
7) Comments: _____


6/14/12
SITE 211253
MW-14
Livermore CA

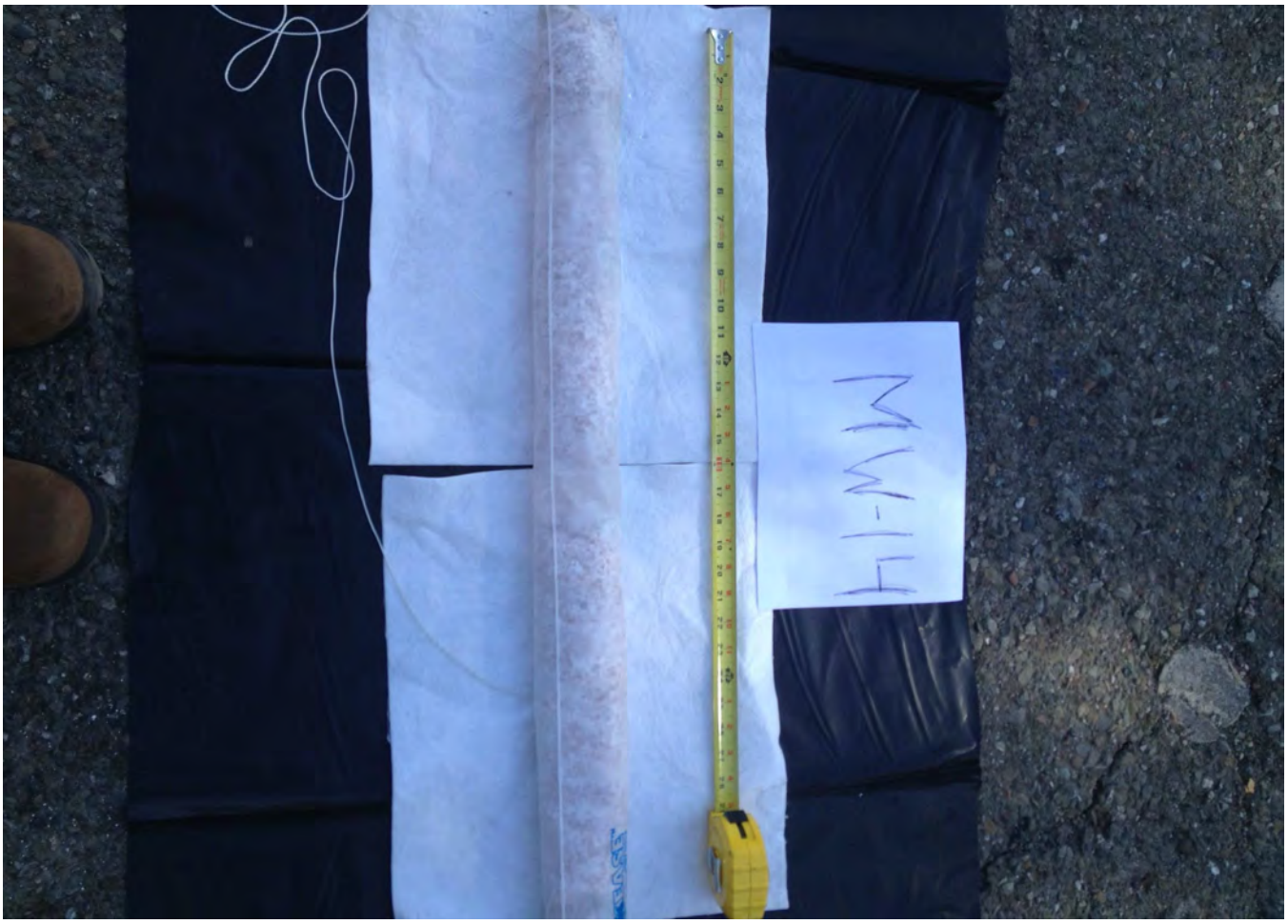

Skimmer
1-800-HOT-HOGS
Absorbs Oil
Not Water
SS# 211253
LIVERMORE
MW-14


SS# 211253
LIVERMORE
MW-14


211253 7/11/12
MW-14
Livermore CA


CHEVRON 211253
MW-14
LIVERMORE, CA 8/8/12


SOCKEASE
930 SPRINGTOWN BLVD. SS# 211253
LIVERMORE CA 9/4/12
MW-14


MW-14


MW-14

ATTACHMENT C:

DEGRADATION CALCULATIONS AND TREND GRAPHS

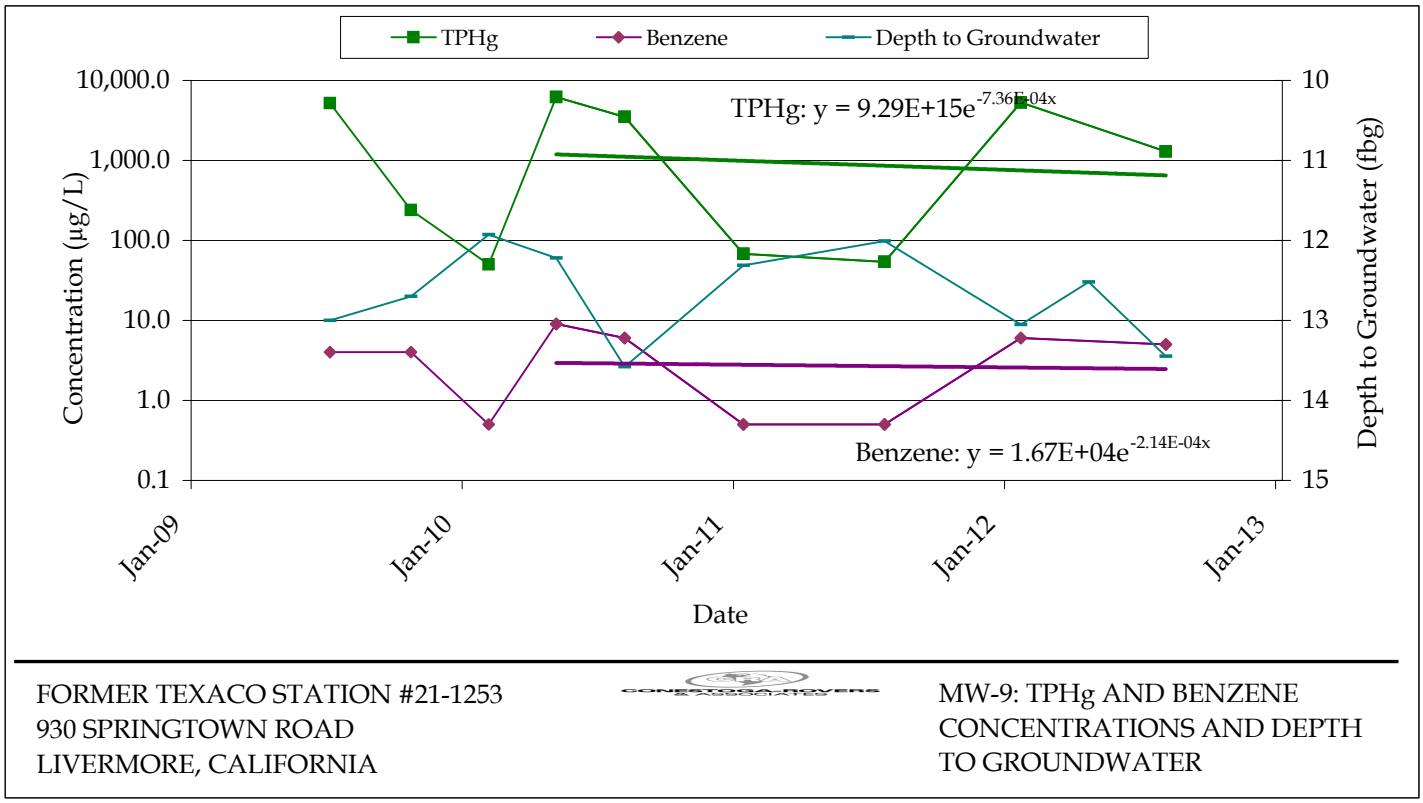
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-9

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L, a = decay constant
b = concentration at time (x), x = time (x) in days

		Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given				
Environmental Screening Levels (ESL) :		y	100	1
Constant:		b	9.29E+15	1.67E+04
Constant:		a	-7.36E-04	-2.14E-04
Starting date for current trend:			5/24/2010	5/24/2010
Calculate				
Attenuation Half Life (years):	(-ln(2)/a)/365.25		2.58	8.85
Estimated Date to Reach ESL:	(x = ln(y/b) / a)		Aug 2019	Mar 2024



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-9: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

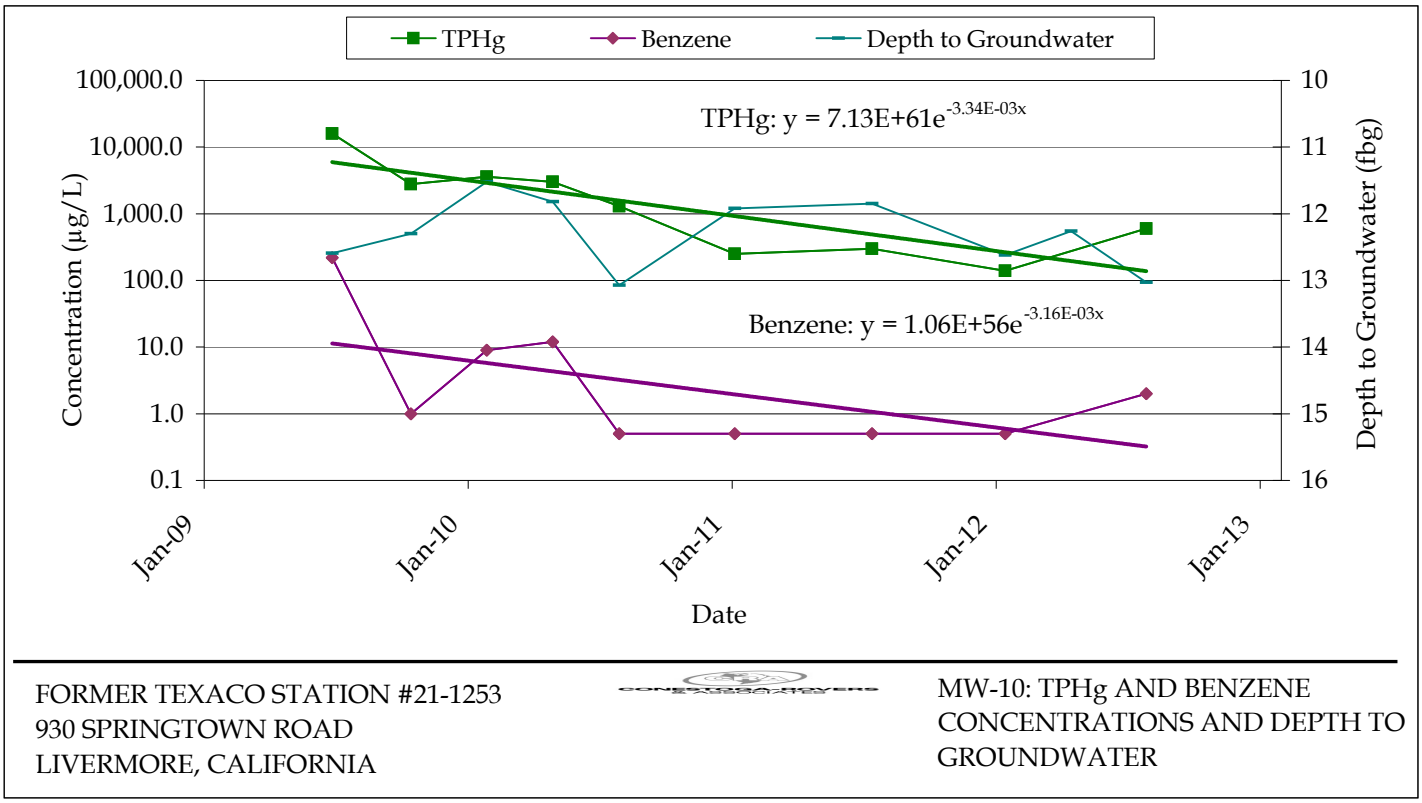
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-10

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L; a = decay constant
b = concentration at time (x); x = time (x) in days

	Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given			
Environmental Screening Levels (ESL) :	y	100	1
Constant:	b	7.13E+61	1.06E+56
Constant:	a	-3.34E-03	-3.16E-03
Starting date for current trend:		7/23/2009	7/23/2009
Calculate			
Attenuation Half Life (years):	(-ln(2)/a)/365.25	0.57	0.60
Estimated Date to Reach ESL:	(x = ln(y/b) / a)	Nov 2012	Aug 2011



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

CONESTOGA-ROVERS

MW-10: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

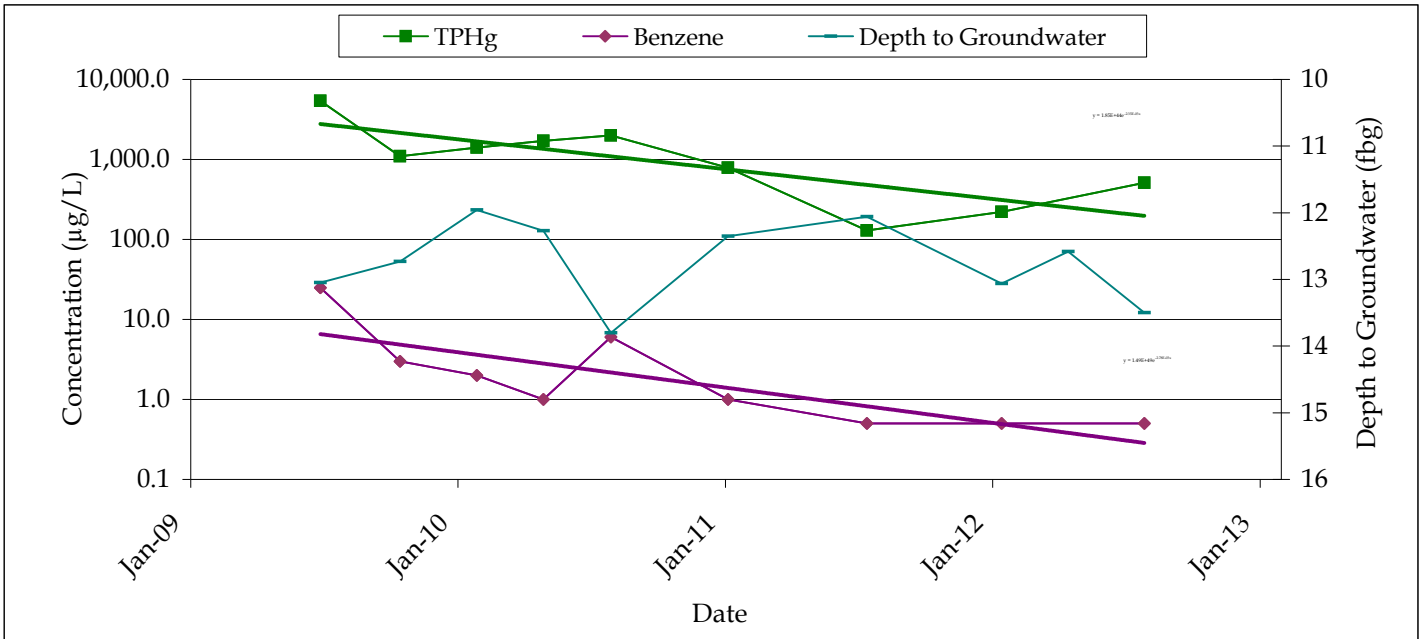
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-11

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L; a = decay constant
b = concentration at time (x); x = time (x) in days

	Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given			
Environmental Screening Levels (ESL) :	y	100	1
Constant:	b	1.85E+44	1.49E+49
Constant:	a	-2.35E-03	-2.78E-03
Starting date for current trend:		7/23/2009	7/23/2009
Calculate			
Attenuation Half Life (years):	(-ln(2)/a)/365.25	0.81	0.68
Estimated Date to Reach ESL:	(x = ln(y/b) / a)	Jun 2013	May 2011



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-11: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

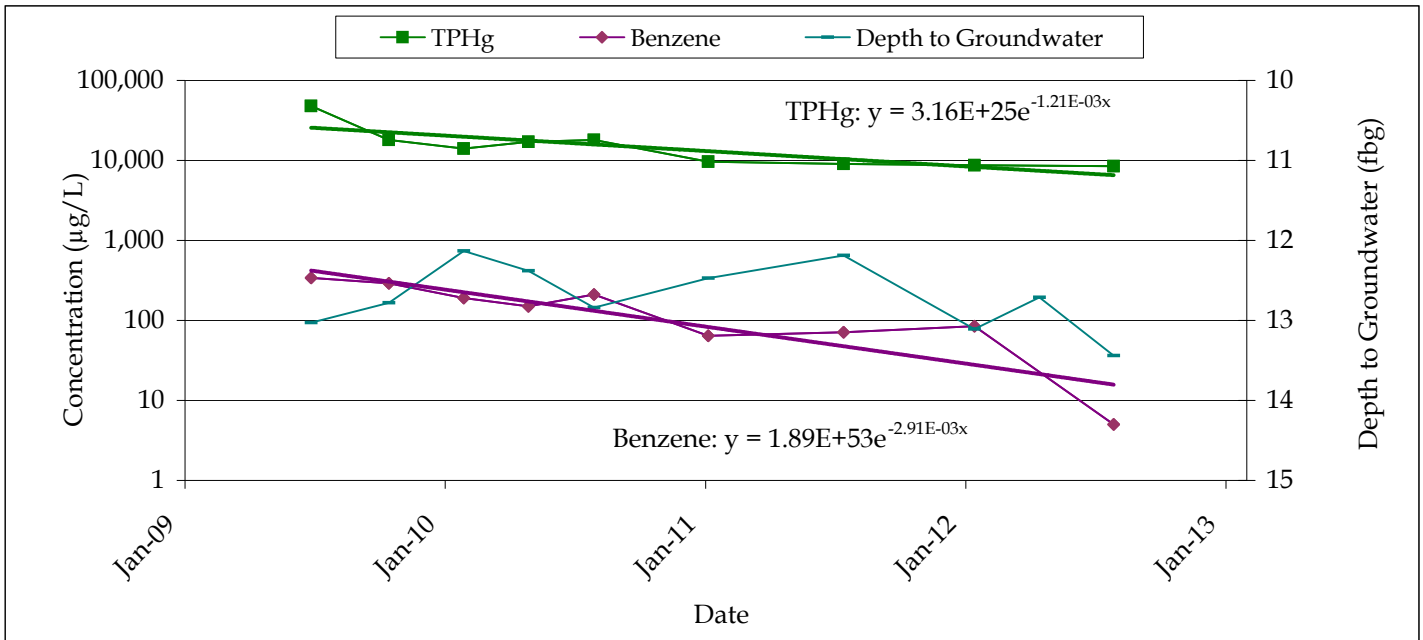
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-12

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L, a = decay constant
b = concentration at time (x), x = time (x) in days

	Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given			
Environmental Screening Levels (ESL) :	y	100	1
Constant:	b	3.16E+25	1.89E+53
Constant:	a	-1.21E-03	-2.91E-03
Starting date for current trend:		7/23/2009	7/23/2009
Calculate			
Attenuation Half Life (years):	(-ln(2)/a)/365.25	1.56	0.65
Estimated Date to Reach ESL:	(x = ln(y/b) / a)	Jan 2022	Mar 2015



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-12: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

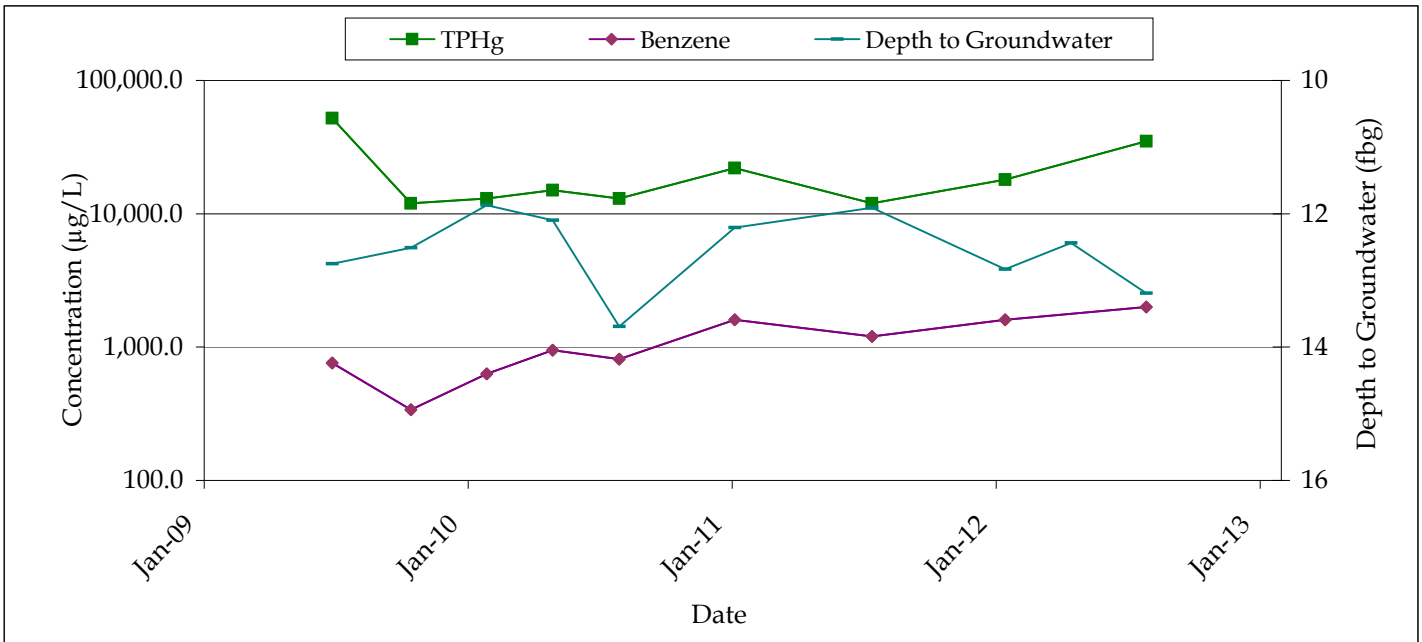
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-13

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L, a = decay constant
b = concentration at time (x), x = time (x) in days

		Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given				
Environmental Screening Levels (ESL) :		y	100	1
Constant:		b	N/A	N/A
Constant:		a	N/A	N/A
Starting date for current trend:			N/A	N/A
Calculate				
Attenuation Half Life (years):	(-ln(2)/a)/365.25		NA	NA
Estimated Date to Reach ESL:	(x = ln(y/b) / a)		Stable	Stable



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-13: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

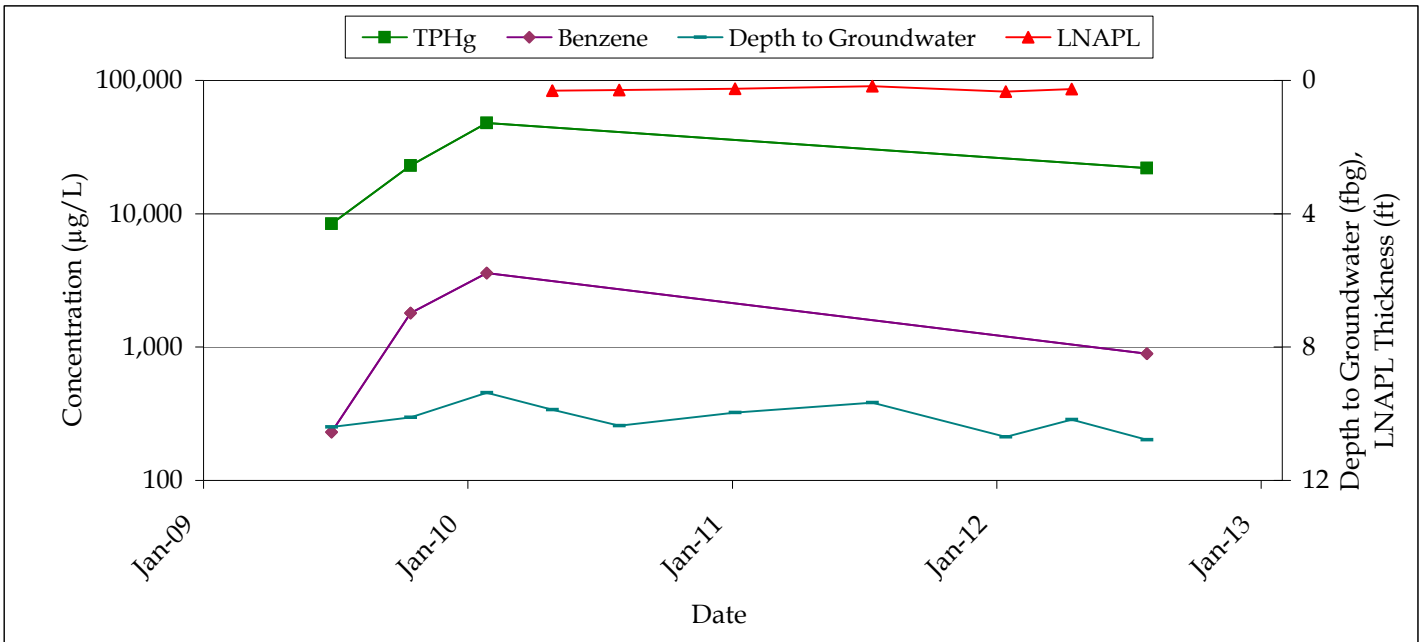
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-14

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L; a = decay constant
b = concentration at time (x); x = time (x) in days

	Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given			
Environmental Screening Levels (ESL) :	y	100	1
Constant:	b	N/A	N/A
Constant:	a	N/A	N/A
Starting date for current trend:		N/A	N/A
Calculate			
Attenuation Half Life (years):	(-ln(2)/a)/365.25	N/A	N/A
Estimated Date to Reach ESL:	(x = ln(y/b) / a)	N/A	N/A



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-14: TPHg AND BENZENE CONCENTRATIONS, DEPTH TO GROUNDWATER AND LNAPL THICKNESS (LNAPLT)

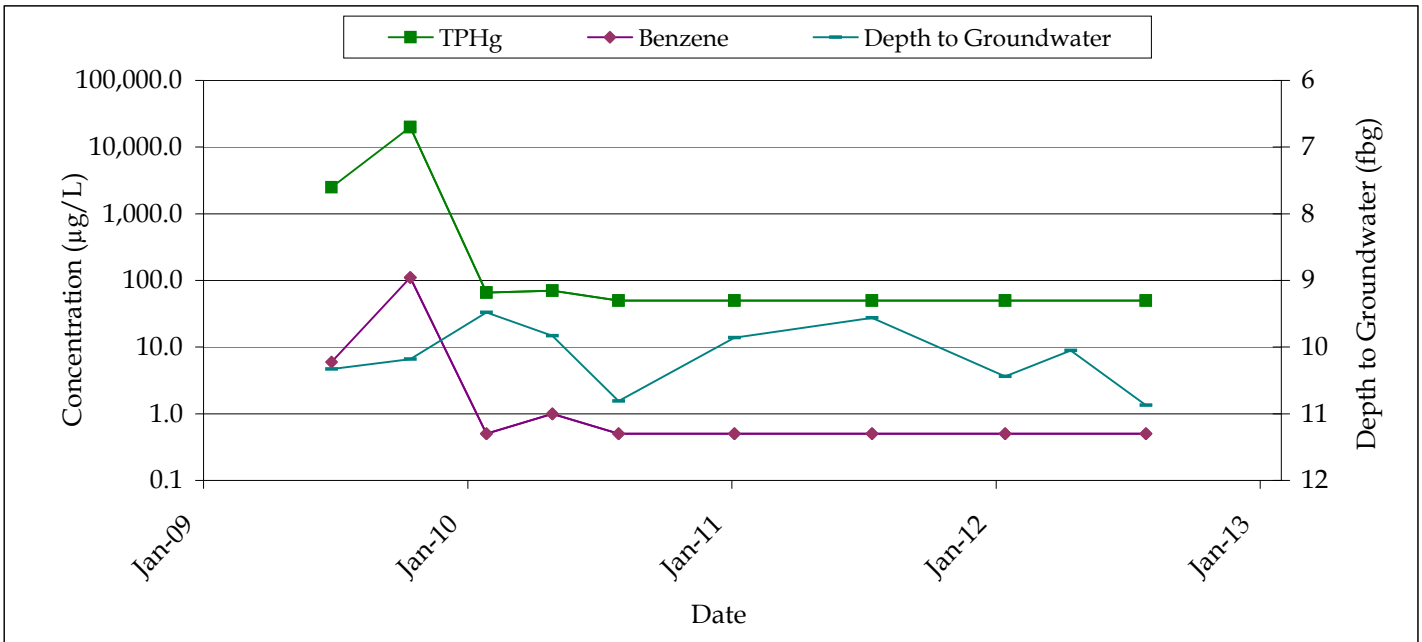
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-15

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L; a = decay constant
b = concentration at time (x); x = time (x) in days

	Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given			
Environmental Screening Levels (ESL) :	y	100	1
Constant:	b	N/A	N/A
Constant:	a	N/A	N/A
Starting date for current trend:		N/A	N/A
Calculate			
Attenuation Half Life (years):	(-ln(2)/a)/365.25	N/A	N/A
Estimated Date to Reach ESL:	(x = ln(y/b) / a)	BELOW ESL	BELOW ESL



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-15: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

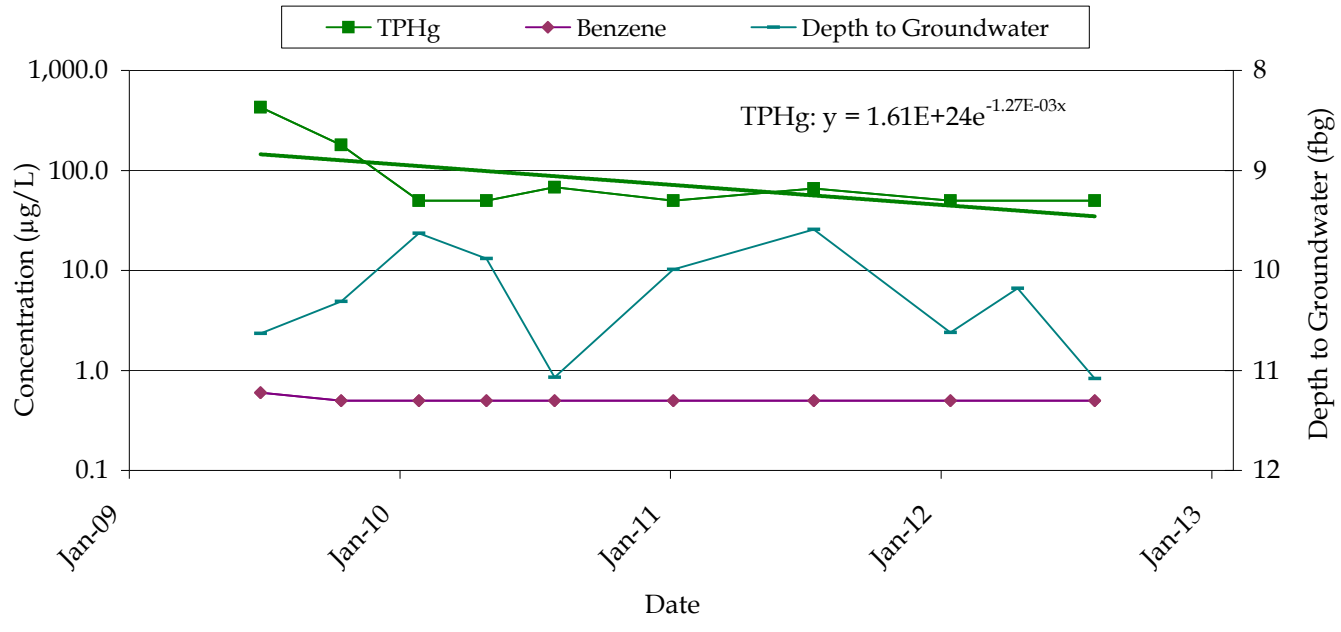
Predicted Time to Reach Environmental Screening Levels (ESL) in Well MW-16

Former Texaco Service Station #21-1253, 930 Springtown Road, Livermore, California

$y = b\,e^{ax}$ **===>** $x = \ln(y/b) / a$

where: y = concentration in µg/L, a = decay constant
b = concentration at time (x), x = time (x) in days

		Constituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given				
Environmental Screening Levels (ESL) :		y	100	1
Constant:		b	1.61E+24	N/A
Constant:		a	-1.27E-03	N/A
Starting date for current trend:			7/23/2009	N/A
Calculate				
Attenuation Half Life (years):	(-ln(2)/a)/365.25		1.50	N/A
Estimated Date to Reach ESL:	(x = ln(y/b) / a)		May 2010	BELOW ESL



FORMER TEXACO STATION #21-1253
930 SPRINGTOWN ROAD
LIVERMORE, CALIFORNIA

MW-16: TPHg AND BENZENE CONCENTRATIONS AND DEPTH TO GROUNDWATER

ATTACHMENT D:

STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

This document describes Conestoga-Rovers & Associates' standard field procedures for soil vapor probe installation and sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

Shallow Soil Vapor Probe Installation

The shallow soil vapor probe method for soil vapor sampling utilizes a hand auger or drill rig to advance a boring for the installation of a soil vapor sampling probe. Soil vapor probes facilitate the collection of in-situ vapor samples. Once the boring is advanced to the final depth, #2/12 filter pack is poured through a tremie pipe to fill the bottom 6 inches of the boring. A permeable, stainless-steel probe tip is connected to ¼-inch outside diameter Teflon tubing via a push-to-connect fitting. The probe tip is then placed approximately 6 inches from the bottom of the boring and covered by 6 inches of #2/16 filter sand. A 12 inch layer of dry granular bentonite is placed on top of the filter pack. Pre-hydrated granular bentonite is then poured to fill the borehole. The tube is labeled, capped, and placed within a traditional well box finished flush to grade. Soil vapor samples will be collected no sooner than 48 hours after installation of the soil vapor probe to allow adequate time for representative soil vapors to accumulate. Soil vapor sample collection will not be scheduled until after a minimum of three consecutive precipitation-free days and irrigation onsite has ceased.

Purging

At least three purge volumes of vapor are removed from the soil vapor probe prior to sampling. The purge volume is defined as the amount of air within the probe and tubing. Purging is performed using the vacuum of a dedicated Summa canister, a flow regulator set to the same flow rate used for sampling, and vacuum gauges. Immediately after purging, soil vapor samples will be collected using the appropriate size Summa canister with attached flow regulator and sediment filter.

Sampling Soil Vapor Probes

Samples will be collected using a SUMMA™ canister connected to the sampling tube of each vapor probe. Prior to collecting soil vapor samples, the initial vacuum of the canisters is measured and recorded on the chain-of-custody. The vacuum of the SUMMA™ canister is used to draw the soil vapor through the flow controller until a negative pressure of approximately 5-inches of mercury is observed on the vacuum gauge and recorded on the chain-of-custody.

The flow controllers should be set to 100-200 milliliters per minute. Field duplicates should be collected for every day of sampling and/or for every 10 samples collected.

In accordance with the DTSC guidance document titled *Advisory-Active Soil Gas Investigations*, dated March 2010, leak testing is necessary during sampling. Helium is recommended, although shaving cream is acceptable. Helium is pumped into a shroud that contains the entire sampling apparatus and the soil vapor probe well vault. A helium meter is used to quantify the percentage helium in the shroud during sampling.

Vapor Sample Storage, Handling and Transport

Samples are stored and transported under chain-of-custody to a state-certified analytic laboratory. Samples should never be cooled due to the possibility of condensation within the canister.

Soil Vapor Probe Destruction

The soil vapor probes will be preserved until they are no longer needed for risk evaluation purposes. At that time, they will be destroyed by extracting the tubing, hand augering to remove the sand and bentonite, and backfilling the boring with neat cement. The boring will be patched with asphalt or concrete, as appropriate.