

Dave Patten Project Manager Marketing Business Unit Chevron Environmental Management Company 6001 Bollinger Canyon Road San Ramon, CA 94583 Tel (925) 842-7877 drpatten@chevron.com

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



By Alameda County Environmental Health 9:49 am, Oct 06, 2017

Re: Former Chevron Service Station No. 90260 21995 Foothill Boulevard Hayward, California Fuel Leak Case No. RO0000383

I have read and acknowledged the content, recommendations and/or conclusions contained in the attached *Sentinel Well Installation Report* submitted on my behalf to Alameda County Department of Public Health's (ACEDH) FTP server and the State Water Resource Control Board's GeoTracker website.

This report was prepared by GHD Services Inc., upon whose assistance and advice I have relied. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed.

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.

Sincerely,

1

Dave Patten Project Manager

Attachment: Sentinel Well Installation Report



October 5, 2017

То:	Mr. Mark Detterman	Ref. No.:	311915
	(ACEH) 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502-6577	From:	Kiersten Hoey
		GHD Tel:	510-420-3347

Subject: Chevron Station 90260; 21995 Foothill Boulevard, Hayward

No. of Copies	Description/Title	Drawing No./ Document Ref.	Issue
1	Sentinel Well Installation Report	67	

Issued for:		Your information Your approval/cor	nments	As requeReturned	ested d to you		Construction For re-submission	Quotation
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Completed b	oy:	Kiersten Hoey [Please Print]			Signed:		quistin	tuy
Filing: Correspondence File								





Sentinel Well Installation Report

Former Chevron Service Station 90260 21995 Foothill Boulevard Hayward, California Fuel Leak Case No. RO0000383

GHD | 5900 Hollis Street Suite A Emeryville, CA 94608 311915 | 2017.3 | 04.05 | Report No. 67 | October 5, 2017



Sentinel Well Installation Report

Former Chevron Service Station 90260 21995 Foothill Boulevard Hayward, California Fuel Leak Case No. RO0000383

Kiersten Hoey

Greg Barclay PG 6260



GHD | 5900 Hollis Street Suite A Emeryville, CA 94608 311915 | 2017.3 | 04.05 | Report No. 67 | October 5, 2017



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1. Introduction

GHD is submitting this *Sentinel Well Installation Report* for the site referenced above on behalf of Chevron Environmental Management Company (CEMC), as outlined in GHD's March 31, 2017 *Feasibility Study/Corrective Action Plan and Work Plan* and approved in Alameda County Department of Environmental Health's (ACDEH) March 25, 2017 letter (Appendix A). To monitor groundwater conditions between the dissolved hydrocarbon plume and the active downgradient irrigation well, GHD installed one sentinel well in Rio Vista Street. The site background, details of the investigation, results, and GHD's conclusions are presented below.

2. Site Background

2.1 Site Description

The site is a former Chevron service station located at 21995 Foothill Boulevard on the western corner of the intersection of Foothill Boulevard and Rex Road in Hayward, California (Figure 1). The site was purchased by Chevron in 1985 from USA Petroleum Corporation. In October 1996, all station facilities, including three 10,000-gallon underground storage tanks (USTs) and product lines were removed (Figure 2). The site is currently a vacant landscaped lot and surrounding land use is residential and commercial.

2.2 Site History

The site has been an open environmental case since 1985 under ACDEH jurisdiction (Fuel Leak Case Number RO0000383 and GeoTracker Global ID T0600100315). A total of 24 monitoring wells, 20 soil vapor extraction wells, 3 soil vapor probes, 2 temporary wells, and 49 soil borings have been installed/advanced at the site (Figure 2). Groundwater monitoring and sampling began in 1988. Remedial activities have consisted of groundwater extraction, two-phase extraction (TPE), and dual-phase extraction (DPE).

The DPE system operated from July 17, 2007 through December 22, 2009 and extracted soil vapor and groundwater from DPE wells DVE-9, DVE-12, DVE-20, MW-5, MW-11, and MW-12. The system operated until the mass removal rates had decreased to a point of diminishing returns (<5 pounds per day). At the time of system shut down, the system had removed an estimated 6,765.2 pounds of TPHg, 15.4 pounds of benzene, and 1.5 pounds of MTBE from soil vapor and groundwater. The total volume of water pumped was 1,293,003 gallons. Additional details of the DPE system operation are presented in Conestoga-Rovers & Associates' February 11, 2010 *Remediation Summary Report.*

A summary of previous environmental investigation and remediation is included in Appendix B.



3. Monitoring Well Installation

To monitor groundwater conditions between the dissolved hydrocarbon plume and the active downgradient irrigation well, GHD installed a sentinel well in Rio Vista Street (Figure 2). Work included the collection and analysis of soil samples and verification of depth to groundwater. Well installation details are presented below.

3.1 Site Specific Health and Safety Plan

GHD performed all work under the guidelines set forth in a comprehensive site-specific health and safety plan. The plan was reviewed and signed by all site workers and visitors, and kept onsite at all times.

3.2 Permits

GHD obtained Alameda County Public Works Agency - Water Resources Well Permit number W2017-0634 and City of Hayward Encroachment Permit number 201705102 (Appendix C) prior to installing the monitoring well.

3.3 Utility Clearance

Prior to drilling, GHD contacted Underground Service Alert (USA) to mark existing underground utilities near the proposed boring locations. GHD contracted Pacific Coast Locators (PCL) of San Leandro, California to verify underground utility locations near the proposed well location. A metal detector, tracer cable, electronic line location equipment, and ground penetrating radar (GPR) were used by PCL to determine utility locations. Prior to drilling, the well location was cleared to 8 feet below grade (fbg) with a hand auger.

3.4 Drilling and Well Installation

On September 7, 2017, VTS Drilling, LLC of Hayward, California (C-57 License # 916085) was contracted to install well MW-24. GHD personnel managed the drilling under the supervision of California Professional Geologist Brandon Wilken. Standard field procedures for well installation are presented in Appendix D.

3.4.1 Soil Sampling

Soil samples were collected at 5 fbg using a 6-inch stainless steel tube in a slide hammer. Following borehole clearance to 8 fbg, a direct push boring was advanced to 40 fbg. Soil samples below 8 fbg were collected from an acetate lined direct push sampler. Soil was continuously logged using the American Society for Testing and Materials (ASTM) D2488-06 Unified Soil Classification System (USCS) and screened using a photoionization detector (PID). Samples collected for analyses were capped with Teflon® tape and plastic end caps. All samples were properly sealed, labeled, preserved on ice, logged on chain-of-custody forms, and released to Eurofins Lancaster Laboratories (Eurofins) of Lancaster, Pennsylvania for analysis. Soils encountered are shown on the boring/well logs in Appendix E.



3.4.2 Monitoring Well Installation

Following borehole clearance and direct push sampling, Well borehole MW-24 was advanced to 35 fbg using 8-inch diameter hollow-stem augers. The monitoring well was constructed with 2-inch diameter Schedule 40 polyvinyl chloride (PVC). Based on the first encountered groundwater at 23 fbg, and to account for seasonal and annual depth to groundwater fluctuations, the well was screened with a 0.020-inch factory-machine slotted PVC from 20 to 35 fbg. Monterey #2/12 sand was used to fill the annular space from 35 fbg to approximately 18 fbg, two feet above the screened interval. Approximately 2 feet of hydrated bentonite seal was placed above the sand pack. Portland II/V cement was placed above the bentonite to approximately to 1 fbg. A traffic-rated well vault was placed at the surface and set to match the existing grade. Well construction details are shown on the boring/well log included in Appendix E.

3.5 Well Development and Sampling

Once an encroachment permit has been obtained from the City of Hayward, Blaine-Tech Service, Inc (Blaine Tech) of San Jose, California will develop well MW-24 and will sample the well at least 48 hours after well development is complete. Well monitoring and sampling results will be submitted with the fourth quarter 2017 groundwater monitoring and sampling report.

3.6 Chemical Analysis

Selected soil samples were analyzed by Eurofins for the following:

- Total petroleum hydrocarbons as gasoline (TPHg) by EAP Method 8015; and
- Benzene, toluene, ethylbenzene and xylenes (BTEX), and naphthalene by EPA Method 8260B.

The laboratory analytical report is included in Appendix F.

3.7 Well Survey

On September 22, 2017, Morrow Surveying, Inc. (Morrow) of West Sacramento, California surveyed geographical coordinates and the top of casing elevation for newly installed monitoring well MW-24. Survey data is included in Appendix G.

3.8 Waste Disposal

Soil cuttings and rinsate water generated during drilling were temporarily stored onsite in sealed and labeled Department of Transportation (DOT) approved 55-gallon drums, awaiting analytical profile results. Following receipt of the analytical profile, the waste will be transported by licensed waste haulers to a Chevron-approved and licensed disposal facility.



4. Investigation Results

4.1 Lithology

Soil encountered during the drilling of well boring MW-24 consisted of silt to approximately 4 fbg, underlain primarily by silty sand, sandy silt, and silt with sand to approximately 28 fbg. Sand, sand with silt and gravel, and silty gravel with sand to approximately 40 fbg. Groundwater was encountered at approximately 23 fbg.

4.2 Light Non-Aqueous Phase Liquid (LNAPL)

No LNAPL was encountered during this investigation.

4.3 Petroleum Hydrocarbons in Soil

No petroleum hydrocarbons were detected in soil samples collected from well boring MW-24 (Table 1).

4.4 Petroleum Hydrocarbons in Groundwater

Groundwater data will be submitted with the quarterly groundwater monitoring and sampling report.

5. Closing

Groundwater monitoring wells, including well MW-24, will be monitored and sampled and a report detailing the monitoring and sampling data will be submitted to the ACDEH per the established schedule.

Figures





FORMER CHEVRON SERVICE STATION 90260 21995 FOOTHILL BOULEVARD HAYWARD, CALIFORNIA 311915-2017.3 Sep 28, 2017

VICINITY MAP

FIGURE 1



Base Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date Oct/2013 - Nov/2013 Accessed: 2016. Source: Morrow Surveying Report Date 10/17/07 and 9/22/17.



CAD File: 311915-2017.3(067)GN-SO002.DWG

Table

Table 1

Soil Analytical Data Former Chevron Station 90260 21995 Foothill Boulevard Hayward, California

Sample ID	Date	Depth	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Naphthalene
		(gai)	Concen	trations re	ported in	milligram	s per kilo	gram (mg/kg)
LTC - Commerce	cial - 0 to 5 fbg	1	NE	8.2	NE	89	NE	45
LTC - Commerc	cial - Outdoor J	Air - 5 to 10 f	NE	12	NE	134	NE	45
LTC - Utility Wo	orker - 0 to 10 t	fbg	NE	14	NE	314	NE	219
Sentinel Well In	stallation							
MW-24	09/07/17	5	<1	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	10	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	15	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	20	<1	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	25	<1	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	30	<1	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	35	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005
MW-24	09/07/17	40	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:

Total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015M

Benzene, toluene, ethylbenzene and xylenes (BTEX) and naphthlanene by EPA Method 8260B

<x = Not detected above method detection limit

fbg = Feet below grade

LTC = Low-threat underground storage tank case closure policy criteria - California State Water Resources Control Board (SWRCB), August 2012, Low-Threat Underground Storage Tank Policy.

Appendix A Regulatory Letter

ALAMEDA COUNTY HEALTH CARE SERVICES



DEPARTMENT OF ENVIRONMENTAL HEALTH LOCAL OVERSIGHT PROGRAM (LOP) For Hazardous Materials Releases 1131 HARBOR BAY PARKWAY, SUITE 250 ALAMEDA, CA 94502 (510) 567-6700 FAX (510) 337-9335

REBECCA GEBHART, Interim Director

May 25, 2017

Mr. David Patten Chevron Environmental Management Co. 6101 Bollinger Canyon Road San Ramon, CA 94583 (Sent via electronic mail to: <u>drpatten@chevron.com</u>)

AGENCY

Subject:

Conditional Work Plan Approval and Plume Delineation and FS/CAP Comments; Fuel Leak Case No. RO0000383 (Global ID # T0600100315), Chevron #9-0260, 21995 Foothill Boulevard, Hayward, CA 94541

Dear Mr. Patten:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file for the above referenced site including the *Feasibility Study / Corrective Action Plan and Work Plan*, dated March 31, 2017, and the *Fourth Quarter 2016, Groundwater Monitoring and Sampling Report,* dated March 1, 2017. The reports were prepared and submitted on your behalf by GHD. Thank you for submitting the reports.

The Feasibility Study / Corrective Action Plan (FS/CAP) portion of the referenced *Feasibility Study / Corrective Action Plan and Work Plan* evaluated four alternative corrective actions (Monitored Natural Attenuation, excavation, groundwater extraction, and Enhanced In-Situ Biodegradation [EISB]), and found based on analytical testing that petroleum hydrocarbon degradation is currently proceeding under extremely anaerobic conditions. The FS/CAP proposed the installation, and quarterly replacement, of five-fool long containers packed with sulfate and sand in five wells (MW--5, DVE-20, SVE-9, DVE-12, and MW-8) to enhance anaerobic biodegradation of hydrocarbons in the five wells, such that biodegradation in the wells would be increased into the highly (sulfate) anaerobic zone from the current extremely (methanogenic) anaerobic biodegradation zone.

The Work Plan portion of the referenced *Feasibility Study / Corrective Action Plan and Work Plan* proposed the installation of a groundwater well on Rio Vista Street to act as a sentinel well upgradient of an actively used private residential irrigation water supply well on that street, and potentially of San Lorenzo Creek. It appears the sentinel well would be located approximately 70 feet upgradient of the private well, which was recently analyzed for site contaminants of concern and yielded non-detectable concentrations at standard limits of reporting. A second, inactive residential water supply well, would not be monitored by a sentinel well, based on the inactive use profile.

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

TECHNICAL COMMENTS

- 1. Work Plan Modifications The work plan portion of the referenced FS/CAP proposes a series of actions with which ACDEH is in general agreement of undertaking; however, ACDEH requests one modification to the approach. Please submit a report by the date identified below.
 - a. Well Screen Interval The work plan in the FS/CAP stated that the screen interval for the sentinel well proposed to be installed upgradient of the actively used private residential irrigation water supply well would utilize an approximately 15 foot long screen interval between 15 and 40 feet below grade surface (bgs). In general ACDEH prefers shorter screen intervals, on the order of approximately 10 feet, in an effort to limit vertical intra-well fluid flow between granular zones of differing transmissivity; however, recognizes some latitude is necessary for in-field well installation

decisions if two granular zones will not be connected by the screen interval. Please incorporate this thinking into the well screen interval selection.

2. Feasibility Study / Corrective Action Plan Recommendations - The FS/CAP portion of the report proposed the installation of passive sulfate-amended canisters at five wells to increase extremely anaerobic degradation to highly anaerobic biodegradation of hydrocarbons in groundwater beneath the site. In ACDEH's view this approach will likely very slowly treat near-well hydrocarbon concentrations in groundwater, but is likely not to address the apparently substantial residual soil contamination source, does not address substantially impacted groundwater further from the proposed wells themselves, or further from the site, such as at offsite downgradient wells MW-13 and MW-18. Groundwater concentrations in these wells are of sufficient concern to ACDEH to note in the previous directive letter that since system shut-down in December 2009 contaminant concentrations have increased substantially in these wells, and that the groundwater concentrations are suggestive of residual, nonmigrating Light Non Aqueous Phased Liquids (LNAPL) in soil which will continue to contaminate groundwater in the vicinity for an extended period. The adequacy of biodegradation of apparently substantial petroleum hydrocarbon concentrations in soil, and in groundwater, including at downgradient locations from the site, with a passive, highly anaerobic bio-enhancement is, in part, sufficiently uncertain that a downgradient sentinel well has been proposed. Additionally, the extent of anaerobic biodegradation outside of each well has not been proposed to be accessed.

While ACDEH is in agreement with the sentinel well installation in order to ensure that the migrating slug of groundwater contamination does not, in the interim, impact the actively used irrigation well, San Lorenzo Creek, or the second inactive irrigation well, it appears appropriate to request an evaluation of remedial alternatives that are capable of remediating the groundwater contaminant plume on and offsite in order to reach Water Quality Objectives in a more reasonable time due to the current groundwater use in the vicinity. This may include an active system, or perhaps a combination active / passive system, at both on and offsite locations, to prevent impacts to the identified sensitive receptors.

Therefore, utilizing the time period the proposed sentinel well will be installed in, ACDEH requests the re-evaluation of FS/CAP options, including such potential options as Air Sparging / Soil Vapor Extraction (AS/SVE), horizontal well installation, or other methods to actively increase the oxygen concentration in soil and groundwater in the residual LNAPL source zone, and in downgradient locations. Other options are also likely to be identified. Please submit a FS/CAP Addendum by the date identified below.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the following specified file naming convention below and schedule:

- July 31, 2017 Feasibility Study / Corrective Action Plan Addendum File to be named: RO383 FEASTUD ADEND R_yyyy-mm-dd
- August 4, 2017 Offsite Investigation (can be combined with above)
 File to be named: RO383_SWI_R_yyyy-mm-dd
- June 5, 2017 First Quarter 2017 Quarterly Groundwater Monitoring Report File to be named: RO383_GWM_R_yyyy-mm-dd
- September 1, 2017 Second Quarter 2017 Quarterly Groundwater Monitoring Report File to be named: RO383_GWM_R_yyyy-mm-dd

Online case files are available for review at the following website: <u>http://www.acgov.org/aceh/index.htm</u>. These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 Mr. David Patten RO0000383 May 25, 2017, Page 3

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

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

Sincerely,

M alke

Mark E. Detterman, PG, CEG Senior Hazardous Materials Specialist

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

cc: Kiersten Hoey, GHD, 5900 Hollis Street, Suite A, Emeryville, CA 94608; (Sent via electronic mail to: Kiersten.Hoey@ghd.com)

Brandon Wilken, GHD, 5900 Hollis Street, Suite A, Emeryville, CA 94608; (Sent via electronic mail to: <u>Brandon.Wilken@ghd.com</u>)

Dilan Roe, ACDEH, (Sent via electronic mail to: <u>dilan.roe@acgov.org</u>) Paresh Khatri, ACDEH; (Sent via electronic mail to: <u>paresh.khatri@acgov.org</u>) Mark Detterman, ACDEH, (Sent via electronic mail to: <u>mark.detterman@acgov.org</u>) Electronic File; GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

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

ELECTRONIC SUBMITTAL OF REPORTS

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

ACKNOWLEDGEMENT STATEMENT

All work plans, technical reports, or technical documents submitted to ACDEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website." 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 6731, 6735, and 7835) 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 licensed 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 case meet this requirement. Additional information is available on the Board of Professional Engineers, Land Surveyors, and Geologists website at: http://www.bpelsg.ca.gov/laws/index.shtml.

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: December 1, 2016		
	ISSUE DATE: July 5, 2005		
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016		
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions		

The Alameda County Environmental Cleanup Oversight Programs (LOP 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 <u>do not</u> 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 <u>deh.loptoxic@acgov.org.</u>
 - 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) Open File Explorer using the Windows key + E keyboard shortcut.
 i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
 - b) On the address bar, type in ftp://alcoftp1.acgov.org.
 - c) Enter your User Name and Password. (Note: Both are Case Sensitive)
 - d) Click Log On.
 - e) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
 - f) 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 <u>deh.loptoxic@acgov.org</u> 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.

Appendix B Summary of Environmental Investigations and Remediation

Appendix B Summary of Environmental Investigation and Remediation

1987 Soil Vapor Contaminant Assessment

EA Engineering (EA) conducted a vapor investigation in 1987. The highest hydrocarbon vapor concentrations were detected in the vicinity of the station's tank field. Additional information available in EA's December 31, 1987 *Report of Soil Vapor Contaminant Assessment*.

January 1988 Subsurface Investigation

Weiss Associates (Weiss) advanced six soil borings to further assess subsurface soil conditions and determine whether hydrocarbons had impacted groundwater. Two were advanced adjacent to the USTs to check for releases near the tank field. The remaining four were advanced across the site and completed as monitoring wells MW-4 through MW-7. Two proposed borings, B-6 and B-8 were aborted due to obstructions at depth. Additional information is available in Weiss' March 31, 1988 letter report.

June 1989 Phase III Investigation

Weiss installed wells MW-11 and MW-12 onsite and MW-13 offsite. Additional information is available in Weiss' August 3, 1989 *Subsurface Investigation Phase III* report.

August 1990 Subsurface Investigation

Weiss installed wells MW-14 through MW-16. Additional information available in Weiss' October 24, 1990 *Subsurface Investigation Phase IV* report.

1991 Remediation Design, Installation, and Operation

Weiss coordinated the design, permitting and installation of a groundwater extraction system. The system was started on August 23, 1991. The system was temporarily shut-down on December 11, 1991 to install a 100-pound vessel of activated alumina for treatment of arsenic in groundwater. Groundwater treatment resumed on December 20, 1991. Additional information is available in a Weiss' March 19, 1992 letter report.

August 1992 Subsurface Investigation

Weiss installed wells MW-17 and P-1 to assess the effects of San Lorenzo Creek on groundwater flow in the area (well MW-17 was installed on the far side of the creek). Low hydrocarbon concentrations were detected at 5.5 and 10.5 fbg in P-1 (up to 37 mg/kg TPHg and 0.58 mg/kg benzene). No hydrocarbons were detected in soil from MW-17. Weiss concluded that groundwater flowed toward San Lorenzo Creek from both sides and appeared to recharge San Lorenzo Creek through cracks and joints in the creek's concrete lining. Additional information available in Weiss's September 17, 1992 *Subsurface Investigation*.

October 1996 Station Demolition

In October 1996 all station facilities were removed, including three 10,000-gallon USTs and product lines. Nearly 1,000 gallons of water and light non aqueous-phase liquid hydrocarbons were pumped from the tank excavation and disposed of offsite. Records indicate that pea gravel and soil overburden was placed back into the tank excavation. Additional information available in Touchstone Development's November 26, 1996 Underground Storage Tank Removal and Sampling Report.

July 1997 Remediation Well Installation

In July 1997, Terra Vac installed sixteen extraction wells and groundwater monitoring well MW-18. Additional information available in Terra Vac's September 29, 1997 *Drilling Report*.

July 1997 RBCA

In July 1997, Terra Vac submitted a revised risk-based corrective action (RBCA) analysis with the riskbased site specific target levels for benzene of 1,900 micrograms per liter (μ g/L) in groundwater and 0.46 mg/kg benzene in soil based on a 10⁻⁵ risk. Benzene was the only constituent analyzed that exceeded target risk levels. These risk values were more conservative than current guidance from the Regional Water Quality Control Board – San Francisco Bay Region.¹ No report from this investigation could be located in ACEH GIS, Chevron or CRA records. Based on this RBCA, ACEH established residential land use remediation goals for benzene in groundwater of 1,900 μ g/L Additional information available in Terra Vac's June 3, 1997 Interim Remediation Work Plan and July 18, 1997 Risk Assessment Addendum.

August 1997 Well Survey

Gettler-Ryan conducted a survey of water wells in the site vicinity. Two domestic wells were located in the ½ mile search radius. No municipal water supply wells were identified. Additional information available in Gettler-Ryan's August 13, 1997 *Well Search* report.

October 1997 Two-Phase Extraction System Installation and Operation

In October 1997, Terra Vac installed and started a two-phase extraction (TPE) remediation system. The system used a 600 SCFM thermal oxidizer. During operations, the TPE system removed an estimated 30,800 pounds of hydrocarbons. Vapor-phase hydrocarbon removal rates during the first 60 days of operation ranged from about 100 to 250 pounds per day. Removal rates increased after about 130 days after wells DVE-17, DVE-18 and DVE-19 were installed and added to the system. Hydrocarbon removal rates after 250 days dropped to below 3 pounds per day. Terra Vac operated the system through approximately June 2002. Additional information available in Terra Vac's December 17, 1997 *Startup Report*.

December 2002 Well Installation

In December 2002, Delta Environmental Consultants (Delta) installed temporary wells TMP-1 and TMP-2 for an upcoming dual-phase extraction (DPE) test. The wells were logged continuously using a direct push soil sampler. Headspace analyses of soil samples indicated a hydrocarbon smear zone from 15.0 to 22.5 fbg in well TMP-1 and from 17.5 to 22.5 fbg in TMP-2. Additional information available in Delta's February 20, 2003 *Dual-Phase Extraction Pilot Testing Results Report*.

December 2002 Dual-Phase Extraction (DPE) Pilot Testing

In December 2002, Delta Environmental Consultants (Delta) conducted a DPE pilot test utilizing wells MW-4, MW-11 and MW-12 and temporary wells TMP-1 and TMP-2. Results indicated a radius of influence of 27 feet from the extraction point and sufficient drawdown to adequately expose the hydrocarbon smear zone to vapor extraction influence. Additional information is available in Delta's February 20, 2003 *Dual-Phase Extraction Pilot Testing Results Report*.

¹ San Francisco Bay Region-Regional Water Quality Control Board, (RWQCB), 2008, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Interim final, November 2007, revised May 2008.

July 2003 Vapor Probe Installation Report

On July 21, 2003, Gregg Drilling advanced three borings to 13.5 fbg and installed vapor probes VP-1 through VP-3. The borings were drilled along the downgradient property boundary in the area of the greatest hydrocarbon impact to groundwater. Additional information is available in Cambria's October 13, 2003 *Vapor Probe Installation Report*.

June 2004 Conduit Study

In June 2004, Cambria Environmental Technology (Cambria) compiled nearby utility location and depth data. Based on maximum utility burial depths and historical maximum groundwater elevation beneath the site, Cambria concluded utilities had not likely acted as potential pathways for hydrocarbon migration from the site. Additional information available in Cambria's June 7, 2004 *Conduit Study*.

May 2006 Well Installation, Modifications and Destructions

In May 2006, Gregg Drilling installed two wells onsite. Groundwater monitoring well MW-19 was installed in the deeper sands, screened from 35-45 fbg, to investigate hydrocarbons concentrations identified by previous borings. Remediation well DVE-20 was installed with a screen interval from 10 fbg to 25 fbg to accommodate the installation of a new remediation system. Groundwater monitoring wells MW-5, MW-11, MW-12 and remediation wells DVE-9 and DVE-12 were deepened and screened from 10 fbg to 25 fbg to accommodate the new remediation system. Remediation wells DVE-1 through DVE-8, DVE-10, DVE-11, DVE-13, DVE-17 through DVE-19 and temporary wells TMP-1 and TMP-2 were properly destroyed by pressure grouting. Additional information is available in Cambria's November 17, 2006 *Monitoring Well Installation, Modification and Destruction Report*.

2006-2009 DPE System Installation and Operation

Installation of the Dual Phase Extraction (DPE) system began in October 2006 and was completed in June of 2007. The system extracted soil vapor and groundwater from DPE wells DVE-9, DVE-12, DVE-20, MW-5, MW-11, and MW-12. CRA began startup testing of the DPE system on June 22, 2007. On July 1, 2007, CRA initiated full-time operation of the system. Details of installation, operation and shut-down are presented in CRA's February 11, 2010 *Remediation Summary Report*.

July 2011 Monitoring Well Destruction

On July 21, 2011, Confluence Environmental, Inc. of Sacramento, California (Confluence) destroyed well MW-10 by pressure grouting as requested by the City of Hayward because of road widening along Foothill Boulevard. Additional information is available in CRA's January 19, 2012 *Well Destruction Report*.

May 2014 Subsurface Investigation

In May 2014, CRA completed an investigation onsite and offsite to assess post-remediation soil conditions and further evaluate the extent of dissolved hydrocarbons downgradient. Additional information is available in CRA's July 25, 2014 *Subsurface Investigation Report, Updated Site Conceptual Model and Data Gap Evaluation*.

August 2016 Water Supply Well Sampling

In August 2016, groundwater samples were collected from the unused private well located at 1108 Rex Road and the active irrigation well located at 22407 Rio Vista Street. No hydrocarbons were detected in either well sample. Details are available in GHD's September 26, 2016 *Private Well Sampling Report*.



GHD | Chevron Environmental Management Company – Sentinel Well Installation Report | 311915 (67)

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street Hayward, CA 94544-1395 Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 08/11/2017 By jamesy

Permit Numbers: W2017-0634 Permits Valid from 08/07/2017 to 08/07/2017

Work Total: \$397.00

Application Id: Site Location:	1499807993283 21995 Foothill Blvd, Hayward. Site is an former gas	33 City of Project Site: Alameda Blvd, Hayward. Site is an former gas station. Work to supplement open		
Project Start Date: Assigned Inspector:	environmental case. 08/07/2017 Contact Eneyew Amberber at (510) 670-5759 or en	Completion Date:08/07/2017 eyew@acpwa.org		
Applicant:	GHD Services, Inc Hudnall Jessica	Phone: 949-836-8218		
Property Owner:	Chevron EMC	Phone:		
Client:	Chevron EMC 6101 Bollinger Canyon Road, San Ramon, CA 945 6101 Bollinger Canyon Road, San Ramon, CA 945	Phone: 510-420-3342 83		
	То	tal Due: \$39	97.00	

	Total Due:	\$397.00
Receipt Number: WR2017-0368	Total Amount Paid:	\$397.00
Payer Name : GHD Services, Inc.	Paid By: CHECK	PAID IN FULL

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 1 Wells Driller: VTS Drilling - Lic #: 916085 - Method: hstem

Specificati	ons						
Permit #	Issued Date	Expire Date	Owner Well	Hole Diam.	Casing	Seal Depth	Max. Depth
			ld		Diam.		
W2017- 0634	08/11/2017	11/05/2017	MW-24	8.00 in.	2.00 in.	1.00 ft	40.00 ft

Specific Work Permit Conditions

1. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

2. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

4. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755

Alameda County Public Works Agency - Water Resources Well Permit

(Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 30 days. Include permit number and site map.

5. Applicant shall submit the copies of the approved encroachment permit to this office within 10 days.

6. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

7. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

8. Minimum surface seal thickness is two inches of cement grout placed by tremie.

9. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.

10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

11. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.



CITY OF HAYWARD ENCROACHMENT PERMIT

APPLIED: 08/31/2017 ISSUED: 08/31/2017 EXPIRES: 11/29/2017 FEE TOTAL: \$1286.00

APPLICATION NUMBER: 201705102

OWNER NAME:	APPLICANT NAME:	CONTRACTOR NAME:
CITY OF HAYWARD	JESSICA HUDNALL - GHD SERVICES, INC	JESSICA HUDNALL - GHD SERVICES, INC
PHONE NUMBER:	PHONE NUMBER:	PHONE NUMBER:
510-583-4200	949-836-8218	949-836-8218
ADDRESS:	ADDRESS:	ADDRESS:
777 B ST	5900 HOLLIS ST SUITE A	5900 HOLLIS ST SUITE A
HAYWARD, CA 94541-5007	EMERYVILLE, CA 94608	EMERYVILLE, CA 94608

THE APPLICANT HEREBY APPLIES FOR PERMISSION TO: INSTALLATION OF SINGLE MONITORING WELL TO AD IN PLUM DELINEATION. MW WILL BE 40FBG W/ SCREEN INTERVAL OF 25-40FBG THE WORK IS PROPOSED TO BE COMPLETED AT: RIGHT OF WAY – 21995 FOOTHILL BLVD

CONDITIONS OF APPROVAL:



REVENUE OFFICE and final inspection. You will need your permit number and the 3 digit code 200 when calling for inspection. You must call for your inspection prior to 4pm on a business day to receive your inspection the next business day. There will be no inspections on Saturdays, Sundays, or City Holidays. If you have additional questions regarding this permit, please call Jason Whipple at (510) 583-4755.

2. Call USA toll free at 811 or 1-800-227-2600 at least 2 full working days prior to excavation or digging.

3. The permittee assumes all responsibility for damage to existing underground utilities.

4. This permit subject to cancellation if work is not completed within 90 days.

5. Any pavement damaged due to this construction shall be neatly edged, removed, and replaced at the direction of the City Inspector. See additional pavement repair requirements under note 11.

6. Any sidewalk, curb, gutter, or any other concrete improvement damaged due to this activity shall be restored to previous condition at the direction of the City Inspector. All concrete work shall be done per current City of Hayward Standard Details. Damaged concrete shall be removed by sawcutting at the nearest score mark or removed at expansion joints. No concrete shall be placed until acceptance of concrete forms. Vandalized concrete must be removed and replaced. Grinding, patching, skim coating, etc. of vandalized concrete will not be accepted.

7. Any street-lane closures are restricted to the hours between 9:00 a.m. and 3:00 p.m. Monday through Friday, with no work on weekends or holidays, unless otherwise authorized by the City Engineer.

8. Permittee must comply with "State of California Manual of Warning Signs, Lights and Devices for Use in Performance of Work upon Highways."

9. Traffic control plan shall be approved by the City Traffic Engineer prior to drilling.

10. A drilling permit is required from ACPWA prior to the start of work.

11. Backfilling of wells shall be per ACPWA well deconstruction permit requirements. In streets or sidewalks, backfill material shall be brought to subgrade and backfill material shall have a minimum compaction of 95%. Pavement (street) repairs shall be sawcut and removed to a distance of no less than 6" from damaged asphalt concrete, however, the asphalt concrete patch shall not be less than 2 feet square. The asphalt concrete thickness shall not be less than adjacent existing AC. For backfilling and

ORIGINAL-FILE

APPLICANT

REVENUE

INSPECTOR

pavement repair of trenches, refer to City Standard Detail SD-125 (D=12", W=12"). Permanent AC patch shall be made with ½" Hot Mix Asphalt Concrete. Cold Mix AC or Cutback AC shall not be used for permanent AC patching. Care shall be taken to protect surrounding asphalt concrete from gouges, scratches, and stains. Gouges, scratches, and stains must be corrected as directed by the City Inspector – up to full depth asphalt concrete removal and replacement.

12. The permittee shall not allow any construction debris (dirt, rock, oil, solvents, sediment-laden water, slurry, concrete, etc.) to enter any storm drain inlets or open channels.

13. This permit shall be available or posted on the project site at all times for review by the City Inspector. Failure to provide this permit may be cause for a failed inspection.

14. The permittee shall have a representative on site during the work and during inspections that is authorized to accept and act upon direction given by the City of Hayward Inspector.

THE APPLICANT HEREBY AGREES TO COMPLY WITH ALL OF THE APPLICABLE SECTIONS OF THE CITY OF HAYWARD MUNICIPAL CODE. STANDARD SPECIFICATIONS, AND ALL CONDITIONS ATTACHED TO THIS APPROVAL.

CODE, STANDAND OF ION (OFFICE)			DATE
OWNER: CHEVRON EMC	DATE: 08/31/17	APPLICANT/CONTRACTOR:	8/31/17
			14 A L

In consideration of the granting of this permit and other goods and valuable consideration thereof, the applicant and owner intending to be legally bound, does hereby for the applicant and owner, and heirs, executors, administrators and assigns of the applicant/owner agree to indemnify and hold harmless the City of Hayward, the members of the City Council and their agents, servants and employees and each of them, from and against liability for injury to or death of persons, and/or the liability for damage to property arising from any and all work herein permitted or, incidental thereto or which may arise from the failure of the permittee to perform the obligations of the permittee, with respect to maintenance.

APPROVED BY: CAITLYN MURRAY FOR BABAK KADERI

DATE: 08/31/17



CITY OF HAYWARD

APP 327d.k425-

d.16 534-

ENCROACHMENT PERMIT APPLICATION

aken by: Permit Number: 201705102 Permit Fee: \$ 1286-
wner:Chevron EMC Phone No.:
ddress: <u>6101 Bollinger Canyon Road</u> City: <u>San Ramon</u> State: <u>CA</u> Zip:
ontractor Name:GHD Services, IncPhone No.: 510-420-3342
ddress:5900 Hollis Street, Ste A City: Emeryville State:CAZip:94608
ontact Person's Name: <u>Jessica Hudnall</u> Phone No.: <u>949-836-8218</u>
pplicant:Jessica Hudnall- GHD Services, Inc Phone No.:949-836-8218
ontractor's License No.: 855376 Class: A
ty Business License (Tax ID No.) 64-1 142590 Expiration Date: 12/31/2017
ork Site location: 21995 Foothill Blvd, Hayward, CA
ate of anticipated work to be started: 9/7/2017 to be completed: 9/7/2017
escription of work (attached plans and details if available or as required): Installation of single monitoring well to aid in plume delineation. Monitoring well will be
set to 40 fbg with a screen interval of 25-40 fbg.

(List all work needs to be done within public right-of-way, any dimensions such as linear feet, square feet of area, quantities of items such SDMH, inlets, driveway, etc.)

Scope of Permit: (Check appropriate box(es) and enter pertinent information to appropriate table(s))

Street work (Co	oncrete)	(trench or bore):			
ft Length of	Number of	ft Length of	ft Length of	Areas of	
curb, gutter and	pedestrian ramps,	planter strip fill per	street cut for	street cut for bore	
sidewalk (7.a.(1))	driveways (7.a.(3))	property (7.a.(4))	trenches (7.c(1))	pits (7.c.(3))	

Drainage system:

ft Length of storm pipe	Number of tie-ins to	Number of new SDMHs, vaults,
and appurtenance (7.b.(1))	existing structures (7.b.(3))	inlets, storm water interceptor or non-
		standard structures (7.b.(4), (5) and (6))

DEPARTMENT OF DEVELOPMENT SERVICES

777 B STREET, HAYWARD, CA 94541-5007 TEL: 510/583-4200 • FAX: 510/583-3649 • TDD: 510/247-3340





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ALAMEDA COUNTY HEALTH CARE SERVICES



REBECCA GEBHART, Interim Director

May 25, 2017

Mr. David Patten Chevron Environmental Management Co. 6101 Bollinger Canyon Road San Ramon, CA 94583 (Sent via electronic mail to: <u>drpatten@chevron.com</u>)

AGENCY

Subject: Conditional Work Plan Approval and Plume Delineation and FS/CAP Comments; Fuel Leak Case No. RO0000383 (Global ID # T0600100315), Chevron #9-0260, 21995 Foothill Boulevard, Hayward, CA 94541

Dear Mr. Patten:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file for the above referenced site including the *Feasibility Study / Corrective Action Plan and Work Plan*, dated March 31, 2017, and the *Fourth Quarter 2016, Groundwater Monitoring and Sampling Report,* dated March 1, 2017. The reports were prepared and submitted on your behalf by GHD. Thank you for submitting the reports.

The Feasibility Study / Corrective Action Plan (FS/CAP) portion of the referenced *Feasibility Study / Corrective Action Plan and Work Plan* evaluated four alternative corrective actions (Monitored Natural Attenuation, excavation, groundwater extraction, and Enhanced In-Situ Biodegradation [EISB]), and found based on analytical testing that petroleum hydrocarbon degradation is currently proceeding under extremely anaerobic conditions. The FS/CAP proposed the installation, and quarterly replacement, of five-fool long containers packed with sulfate and sand in five wells (MW--5, DVE-20, SVE-9, DVE-12, and MW-8) to enhance anaerobic biodegradation of hydrocarbons in the five wells, such that biodegradation in the wells would be increased into the highly (sulfate) anaerobic zone from the current extremely (methanogenic) anaerobic biodegradation zone.

The Work Plan portion of the referenced *Feasibility Study / Corrective Action Plan and Work Plan* proposed the installation of a groundwater well on Rio Vista Street to act as a sentinel well upgradient of an actively used private residential irrigation water supply well on that street, and potentially of San Lorenzo Creek. It appears the sentinel well would be located approximately 70 feet upgradient of the private well, which was recently analyzed for site contaminants of concern and yielded non-detectable concentrations at standard limits of reporting. A second, inactive residential water supply well, would not be monitored by a sentinel well, based on the inactive use profile.

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

TECHNICAL COMMENTS

- 1. Work Plan Modifications The work plan portion of the referenced FS/CAP proposes a series of actions with which ACDEH is in general agreement of undertaking; however, ACDEH requests one modification to the approach. Please submit a report by the date identified below.
 - a. Well Screen Interval The work plan in the FS/CAP stated that the screen interval for the sentinel well proposed to be installed upgradient of the actively used private residential irrigation water supply well would utilize an approximately 15 foot long screen interval between 15 and 40 feet below grade surface (bgs). In general ACDEH prefers shorter screen intervals, on the order of approximately 10 feet, in an effort to limit vertical intra-well fluid flow between granular zones of differing transmissivity; however, recognizes some latitude is necessary for in-field well installation

Mr. David Patten RO0000383 May 25, 2017, Page 3

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

Should you have any questions, please contact me at (510) 567--6876 or send me an electronic mail message at <u>mark.detterman@acgov.org</u>.

Sincerely,

Marke free

Mark E. Detterman, PG, CEG Senior Hazardous Materials Specialist

- Enclosures: Attachment 1 Responsible Party (ies) Legal Requirements / Obligations Electronic Report Upload (ftp) Instructions
- cc: Kiersten Hoey, GHD, 5900 Hollis Street, Suite A, Emeryville, CA 94608; (Sent via electronic mail to: <u>Kiersten.Hoey@ghd.com</u>)

Brandon Wilken, GHD, 5900 Hollis Street, Suite A, Emeryville, CA 94608; (Sent via electronic mail to: Brandon.Wilken@ghd.com)

Dilan Roe, ACDEH, (Sent via electronic mail to: <u>dilan.roe@acgov.org</u>) Paresh Khatri, ACDEH; (Sent via electronic mail to: <u>paresh.khatri@acgov.org</u>) Mark Detterman, ACDEH, (Sent via electronic mail to: <u>mark.detterman@acgov.org</u>) Electronic File; GeoTracker

Albumodo County Environmental Cleanum	REVISION DATE: December 1, 2016			
Alameda County Environmental Cleanup	ISSUE DATE: July 5, 2005			
(LOP and SCP)	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016			
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions			

The Alameda County Environmental Cleanup Oversight Programs (LOP 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 <u>do not</u> 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.
- <u>Do not</u> 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 <u>deh.loptoxic@acgov.org.</u>
 - 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) Open File Explorer using the Windows
 i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
 - b) On the address bar, type in ftp://alcoftp1.acgov.org.
 - c) Enter your User Name and Password. (Note: Both are Case Sensitive)
 - d) Click Log On.
 - e) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
 - f) 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 <u>deh.loptoxic@acgov.org</u> 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.



Of the four remedial alternatives evaluated, EISB is the most cost effective, will have the greatest effect on groundwater conditions, and most feasible given the site conditions. Therefore, we recommend implementing EISB as the preferred remedial technology for achieving the groundwater cleanup goal.

5. Conclusion

Based on our evaluation of remedial alternatives, GHD recommends implementing quarterly EISB sulfate canister installation/replacements for at least one year. The goal will be to sufficiently enhance biodegradation and reduce the estimated time for the COCs to reach the cleanup goals by increasing the rate of aerobic biodegradation in wells MW-5, DVE-12, and DVE-20. Following the one year (four quarters) of groundwater sampling, the monitoring results will be used to estimate the rate of natural attenuation of the COCs and to verify that the WQOs in the wells will be met in a more reasonable time, following active remediation. Upon approval by ACDEH, GHD will prepare a Remedial Action Plan proposing this work.

6. Work Plan

To monitor groundwater conditions between the dissolved hydrocarbon plume and the active downgradient irrigation well, GHD proposes to install a sentinel well in Rio Vista Street (Figure 2). Proposed work includes collection and analysis of soil and groundwater samples, verification of depth to groundwater, and evaluation of groundwater flow beneath the site.

6.1 Permits

GHD will obtain drilling permits from Alameda County Public Works Agency and an encroachment permit from City of Hayward.

6.2 Site-Specific Health and Safety Plan

GHD 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 and remain onsite during all field activities.

6.3 Utility Location and Clearance

GHD will contact Underground Service Alert (USA) to coordinate location of subsurface utilities no less than 48 hours prior to the start of field activities. GHD will subcontract a licensed geophysicist to confirm the locations of underground utilities. In accordance with CEMC and GHD safety standards, a hand auger or air-knife equipment will be utilized to clear the locations to a depth of 8 fbg.

6.4 Well Borings and Installation

The well boring will be advanced using 8-inch outside diameter hollow-stem auger to approximately 40 fbg with an approximate screened interval of 25 to 40 fbg. However, the screen interval may be



modified based on field observation of water levels encountered during drilling activities. The monitoring wells will be constructed using 2-inch diameter Schedule 40 PVC with a 0.020-inch slotted screen. The well screen will be surrounded by a sand pack consisting of #2/12 sand to approximately 1 foot above the top of the screened interval. One foot of hydrated bentonite will be placed above the sand pack. Portland II/V cement will be placed above the bentonite to approximately 1 fbg. A traffic-rated well vault will be placed on the surface and secure to match the existing grade. A licensed land surveyor will survey the top of casing elevations and well locations. GHD's Standard Field Procedure for Soil Boring and Monitoring Well Installation is presented in Appendix E.

6.5 Soil Sampling

GHD will collect soil samples at 5 fbg and 5-foot intervals thereafter to total depth. Soil samples will also be collected at the soil/groundwater interface, at obvious changes in soil types, and where hydrocarbon indications are observed to the total depth explored. Soils will be logged using the ASTM D2488-06 Unified Soil Classification System. The 5 fbg sample will be collected using a slide hammer lined with clean stainless steel sleeves. Soil samples beyond 5 feet will be collected using a direct-push sampler, lined with polyethylene sampling tubes. Soil samples will be screened using a photoionization detector (PID) and all PID measurements will be recorded on the boring logs. All samples will be sealed, labeled, logged on a chain-of-custody, placed on ice, and transported to a CEMC approved state-certified laboratory for analysis.

6.6 Well Development and Sampling

The well will be developed using standard surge agitation and pumping. The well will be developed no sooner than 72 hours after installation and will be sampled at least 48 hours after well development is complete.

6.7 Chemical Analysis

Selected soil and groundwater samples will be analyzed for the following with a standard turnaround time of 10 working days:

- Total petroleum hydrocarbons as gasoline by EPA Method 8015.
- Benzene, toluene, ethylbenzene, total xylenes (BTEX) and naphthalene by EPA Method 8260B.

6.8 Waste Disposal

Soil cuttings and rinsate water generated during well installation will be placed in DOT-approved drums, labeled appropriately, and temporarily stored onsite. The waste will be transported by licensed waste haulers to a CEMC-approved, California licensed disposal facility following the receipt of an analytical profile.



GENERAL NOTES

1 THIS PLAN SUPPLEMENTED WITH 2014 CA MUTCO.

THE LOCATION OF THE SIGNS SHOWN ON THE PLAN ARE GUIDELINES AND ACTUAL LOCATION WILL DEPEND UPON ALIGNMENT, GRADE, LOCATION OF THE STREET ² INTERSECTIONS, AND 85TH PERCENTILE.

3 NOTIFY LOCAL LAW ENFORCEMENT, FIRE, AND AMBULANCE COMPANIES WITHIN 72 HOURS BEFORE CONSTRUCTION BEGINS. KEEP OPEN ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES

CONTINUAL MONITORING AND MAINTENANCE OF THE TRAFFIC CONTROL ZONE WILL BE IMPLEMENTED FOR THE PURPOSE OF MAINTAINING EMERGENCY ACCESS. ACCOMMODATION FOR PEDESTRIANS, BICYCLE TRAFFIC AND THE DISABLED.

5 PROPER TRAINING OF TRAFFIC CONTROLLERS, PROPER DEVICES & PROPER USE OF THE DEVICES, REQUIRED AT ALL TIMES.

6 ALL SIGNS IMPLEMENTED WILL ONLY BE VIEWABLE WHEN IN USE, OTHERWISE ALL WARNING DEVICES ARE TO BE TAKEN DOWN OR COVERED

7 NOTHING ALLOWED IN BUFFER/TRANSITION AREA AT ANY TIME.

8 ALL CONFLICTING MARKINGS ARE TO BE REMOVED FOR PROJECTS THAT LAST A TERM OF 3 DAYS OR LONGER.

9 SIGNS AND CHANNELIZING DEVICES MUST BE RETRO REFLECTIVE OR ILLUMINATE DURING THE NIGHT, MINIMUM VISIBILITY 1000' (FEET).

10 ONLY ONE SIDEWALK WILL BE CLOSED AT A TIME. PEDESTRIAN AND DISABLED ACCESS TO BE MAINTAINED PER 2014 CA MUTCO STANDARDS.

11 CONTACT UNDERGROUND SERVICE ALERT (USA) 48 HOURS PRIOR TO ANY EXCAVATION FOR POTENTIAL UTILITY CONFLICTS.

RECOMMENDED ADVANCE WARNING SIGN SPACING TABLE

(CA MUTCD 2014 EDITION TABLE 6C-1, SEE TABLE FOR ADDITIONAL DETAILS)

ROAD TYPE	DISTAN	CE BETWEE	N SIGNS
	A	В	С
URBAN (LOW SPEED)-25MPH OR LESS	100	100	100
URBAN (LOW SPEED)-MORE THAN 25MPH TO 40MPH	250	250	250
URBAN (HIGH SPEED)-MORE THAN 40MPH	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

C	GHI		S	E	R	2					S			С
SPEED	FORMULA	BUFFER	DE	DEVICE SPACING TABLE MINIMUM TAPER LENGTHS					LE IS	MAXIM CON			UM 2014 MUTCD SECTION 6C.04	
		SPACE	L						L MEBGE			LONG	TAPER	SIGN SPACING
25	2	155'	104'	52'	35'	115'	57'	38'	125'	63'	42'	25'	13'	100'-200'
30	WS ²	200'	150'	75'	50'	165'	83'	55'	180'	90'	60'	30'	15'	120'-250'
35	L= 60	250'	204'	102'	68'	225'	112	75'	245'	123'	82'	35'	18'	140'-280'
40		305'	267'	133'	89'	293'	147	98'	320'	160'	107'	40'	20'	160'-320'
45		360'	450'	225'	150'	495'	248	165'	540'	270'	180'	45'	23'	360'-540'
50		425'	500'	250'	167'	550'	275	183'	600'	300'	200'	50'	25'	400'-600'
55	I-WS	495'	550'	275'	183'	605'	303'	202'	660'	330'	220'	50'	28'	440'-660'
60	2-110	570'	600'	300'	200'	660 ⁺	330'	220'	720'	360'	240'	50'	30'	480'-720'
65		645'	650'	325'	217'	715'	358'	238'	780'	390'	260'	50'	33'	520'-700'
70		730'	700'	350'	233'	770'	385'	257'	840'	420'	280'	50'	35'	560'-820'
IGH SPEED OTH ARE E .) 85TH % T .) POSTED .) ANTICIPA	A S 40 MPH & LES) IS 45 MPH & AB ASED ON: ILE OR IF NOT AN SPEED LIMIT (PS ATED SPEED.	ove /Ailable, The L)	EN USI	E				S = SPEE W = WIDT L = TAPE	:D FH (OF R LÉN(FSET f GTH	FROM PA	TH OF T	RAVEL)	
WORK AREA TRAFFIC CONTROL: 22101 RIO VISTA ST														
1	CONTAC	CT: JESSI	CAH	UND	NALL					ТР			ACEN	
	CONTAC	CT: (510) 4	120-	3377)					I Th				IEINT, INU
#	JOB NU	MBER: 116	5240	5	-	PLA	N#·	29210		800	763.3	4 Lakes - A 999	GW TUIK	
Y	PERMIT NUMBER:													
	COVER	SHEFT		SI7E.	B	604	IE.	NTG		Traffic	Control Service	ces - Sales &	Rentals	TMI
													-	
	DATE.	3/16/2017				ppr	DAD	N.1.5.	VF	Permit		Engineering) - Training	

LEGEND										
	- WORK AREA	l	- TYPE-III BARRICADE W/ SIGN							
¥	- HIGH LEVEL WARNING DEVICE	X	- TYPE-II BARRICADE W/ SIGN							
₽Ţ	- FLASHING ARROW SIGN (FAS)]ı	- ADA BARRICADE W/ SIGN							
F	- FLAGGER	•	- CHANNELIZATION DEVICE							
þ	- EXISTING SIGN		- SIGN							









CAD File: 311915-2017.1(064)GN-SO002.DWG

Appendix D Standard Field Procedures for Soil Borings and Well Installation

Appendix D

Standard Field Procedures for Soil Boring and Monitoring Well Installation

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

Soil Borings

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the ASTM D2488-06 Unified Soil Classification System by a trained geologist working under the supervision of a California Professional Geologist (PG).

Soil Boring and Sampling

Prior to drilling, the first 8 feet of the boring are cleared using an air or water knife and vacuum extraction or hand auger. This minimizes the potential for impacting utilities. Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

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

Sample Analysis

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

Field Screening

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

Water Sampling

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

Grouting

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

Monitoring Well Installation, Development, and Sampling

Well Construction and Surveying

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

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

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

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

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

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

Groundwater Sampling

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

Waste Handling and Disposal

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

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

Appendix E Boring/Well Log



REMARKS

GHD Services, Inc. 5900 Hollis Street, Suite A Emeryville, California 94608 Telephone: 510-420-0700 Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Chevron Environmental Management Company	BORING/WELL NAME	MW-24		
JOB/SITE NAME	Chevron Service Station 90260	DRILLING STARTED	07-Sep-201	7	
LOCATION	21995 Foothill Boulevard, Hayward, CA	DRILLING COMPLETED	07-Sep-201	7	
PROJECT NUMBER	311915	WELL DEVELOPMENT DA	TE (YIELD)	NA	
DRILLER	VTS Drilling LLC C-57, #916085	GROUND SURFACE ELEV	ATION	NA	
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVAT	ON _	NA	
BORING DIAMETER	8"	SCREENED INTERVALS	_	20 to 35 fbg	
LOGGED BY	Hudnall, J.	DEPTH TO WATER (First	Encountered)	23.00 fbg (07-Sep-17)	$\overline{\nabla}$
REVIEWED BY	Hoey, K.	DEPTH TO WATER (Static	:)	NA	Ţ

CONTACT DEPTH (fbg) SAMPLE ID PID (ppm) BLOW COUNTS GRAPHIC LOG EXTENT DEPTH (fbg) U.S.C.S. LITHOLOGIC DESCRIPTION WELL DIAGRAM ASPHALT 0.4 Silty GRAVEL with Sand: fine to medium sand, fine 0.9 gravel, very dark brown, dry. SILT with Sand: fine sand, very dark brown, dry, loose, low to medium plasticity. ML 4.0 Silty SAND: fine sand, very dark grayish brown, moist. MW-24-S-5-170907 0.0 5 SM 7.0 Poorly Graded SAND with Silt: fine sand, very dark gravish brown, moist. Portland Type I/II MW-24-S-10-170907 0.0 10 2" diam., Schedule 40 PVC SM Silty SAND: fine sand, very dark gravish brown, moist. 14.0 Sandy SILT: fine sand, brown, moist, soft, medium plasticity. 0.0 MW-24-S-15-170907 ML 15.0 15 Well Sorted SAND with Silt: fine sand, very dark yellowish brown, moist. SM 16.0 SILT with Sand: fine sand, very dark gravish brown, moist, soft. Hydrated Bentonite Chips 0.0 MW-24-S-20

Continued Next Page



GHD Services, Inc. 5900 Hollis Street, Suite A Emeryville, California 94608 Telephone: 510-420-0700 Fax: 510-420-9170

JOB/SITE NAME

Chevron Environmental Management Company Chevron Service Station 90260

21995 Foothill Boulevard, Hayward, CA

BORING/WELL NAME DRILLING STARTED DRILLING COMPLETED

MW-24 07-Sep-2017

07-Sep-2017

Continued from Previous Page

	PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGR	AM
	0.0		20-170907 MW-24-S- 25-170907		 	ML		@ 22 fbg: Mottled orange-brown. @ 23 fbg: Wet. <u>Silty SAND:</u> fine sand, very dark grayish brown, wet.	꼬 24.0 26.0		
	0.0		MW-24-S- 30-170907		 	SW		SILT with Sand: fine sand, dark grayish brown, moist, high plasticity. Well Graded SAND with Silt and Gravel: fine to medium sand, coarse gravel, angular gravel, dark brown, wet. Silty GRAVEL with Sand: medium to coarse sand	28.0	Monterey Sand #2/16 2"-diam, 0.020" Slotted Schedul PVC	' le 40
WW-24 GINT LOG.GPJ DEFAULT.GDT 25/9/17	0.0		MW-24-S- 35-170907		 - <u>35</u>	GM		Well Graded SAND with Silt and Gravel: medium to coarse sand, fine gravel, very dark brown, wet.	35.0	Bottom of Bor @ 35 fbg	ring
PID) C:\USERS\MDUTRA\DESKTOP\311915-M	0.0		MW-24-S- 40-170907			SM		<u>Poorly Graded SAND:</u> medium to coarse sand, dark grayish brown, wet.	38.0 40.0	Geoprobe advant to 40 fbg to collect foot sample.	ced ct 40
WELL LOG (F											

CLIENT NAME LOCATION

BORING / WELL LOG

Appendix F Laboratory Analytical Report





2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Prepared for:

ChevronTexaco 6001 Bollinger Canyon Rd L4310 San Ramon CA 94583

Report Date: September 22, 2017

Project: 90260

Account #: 10880 Group Number: 1848219 PO Number: 0015248988 Release Number: PATTEN State of Sample Origin: CA

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <u>http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/</u>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To GHD Electronic Copy To Chevron Attn: Kiersten Hoey Attn: GHD EDD

Respectfully Submitted,

rek Carts

Amek Carter Specialist

(717) 556-7252





2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

SAMPLE INFORMATION

Client Sample Description	Collection Information	ELLE#
MW24-S-5-170907 Grab Soil	09/07/2017 10:20	9199796
MW24-S-10-170907 Grab Soil	09/07/2017 10:40	9199797
MW24-S-15-170907 Grab Soil	09/07/2017 10:45	9199798
MW24-S-20-170907 Grab Soil	09/07/2017 10:55	9199799
MW24-S-25-170907 Grab Soil	09/07/2017 11:00	9199800
MW24-S-30-170907 Grab Soil	09/07/2017 11:05	9199801
MW24-S-35-170907 Grab Soil	09/07/2017 11:35	9199802
MW24-S-40-170907 Grab Soil	09/07/2017 11:40	9199803

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW24-S-5-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199796 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected: 09/07/2017 10:20 by	JH
--------------------------------	----

Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR01

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	1
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	1
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	1
10237	Toluene		108-88-3	N.D.	0.001	0.005	1
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	1
GC Vol	latiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1	24.93

ChevronTexaco

San Ramon CA 94583

6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ie	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/13/2017	22:22	Patrick T Herres	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:48	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	16:06	Jeremy C Giffin	24.93
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:49	Anastasia K Jaynes	n.a.



Analysis Report

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Sample Description: MW24-S-10-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199797 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected:	09	/07	/2017	10:40	by JH
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Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR02

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	0.98
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	0.98
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	0.98
10237	Toluene		108-88-3	N.D.	0.001	0.005	0.98
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	0.98
GC Vol	latiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1.0	25.46

ChevronTexaco

San Ramon CA 94583

6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/13/2017	22:45	Patrick T Herres	0.98
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:52	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	16:45	Jeremy C Giffin	25.46
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:53	Anastasia K Jaynes	n.a.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW24-S-15-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199798 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected: 09/07/2017 10:45 by JH

Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR03

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	0.98
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	0.98
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	0.98
10237	Toluene		108-88-3	N.D.	0.001	0.005	0.98
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	0.98
GC Vol	latiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1.0	25.2

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6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	le	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/13/2017	23:08	Patrick T Herres	0.98
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:55	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	18:07	Jeremy C Giffin	25.2
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:56	Anastasia K Jaynes	n.a.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW24-S-20-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199799 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected: 09/07/2017	10:55	by JH
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Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR04

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	1
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	1
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	1
10237	Toluene		108-88-3	N.D.	0.001	0.005	1
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	1
GC Vol	latiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1	24.65

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6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/13/2017	23:31	Patrick T Herres	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:58	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	18:46	Jeremy C Giffin	24.65
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	09:59	Anastasia K Jaynes	n.a.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW24-S-25-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199800 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected: U9/U//2U1/ 11:UU by a	ollected:	09/07	/2017	11:00	by JH
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Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR05

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	0.99
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	0.99
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	0.99
10237	Toluene		108-88-3	N.D.	0.001	0.005	0.99
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	0.99
GC Vol	atiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1	24.53

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6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/13/2017	23:53	Patrick T Herres	0.99
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:02	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	19:26	Jeremy C Giffin	24.53
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:03	Anastasia K Jaynes	n.a.



Analysis Report

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Sample Description: MW24-S-30-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199801 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected:	09/07	/2017	11:05	by JH
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Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR06

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	1.01
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	1.01
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	1.01
10237	Toluene		108-88-3	N.D.	0.001	0.005	1.01
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	1.01
GC Vol	atiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1	24.51

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6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	e	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/14/2017	00:16	Patrick T Herres	1.01
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:06	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	20:05	Jeremy C Giffin	24.51
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:08	Anastasia K Jaynes	n.a.



Analysis Report

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Sample Description: MW24-S-35-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199802 ELLE Group # 1848219 Account # 10880

Project Name: 90260

Collected:	09/07	/2017	11:35	by JH
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Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR07

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	1.02
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	1.02
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	1.02
10237	Toluene		108-88-3	N.D.	0.001	0.005	1.02
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	1.02
GC Vol	latiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1.0	25.54

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	le	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/14/2017	00:39	Patrick T Herres	1.02
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:11	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	20:44	Jeremy C Giffin	25.54
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:11	Anastasia K Jaynes	n.a.



Analysis Report

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Sample Description: MW24-S-40-170907 Grab Soil Facility# 90260 CRAW 21995 Foothill-Hayward T0600100315

ELLE Sample # SW 9199803 ELLE Group # 1848219 Account # 10880

Project Name: 90260

$corrected $, $o_{j}/o_{j}/2orr$, $rrrrr$	Collected:	09/07	/2017	11:40	by .	JH
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Submitted: 09/09/2017 09:45 Reported: 09/22/2017 16:30

HWR08

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Benzene		71-43-2	N.D.	0.0005	0.005	0.98
10237	Ethylbenzene		100-41-4	N.D.	0.001	0.005	0.98
10237	Naphthalene		91-20-3	N.D.	0.001	0.005	0.98
10237	Toluene		108-88-3	N.D.	0.001	0.005	0.98
10237	Xylene (Total)		1330-20-7	N.D.	0.001	0.005	0.98
GC Vol	latiles	SW-846	8015B modified	mg/kg	mg/kg	mg/kg	
01725	TPH-GRO N. CA soil	C6-C12	n.a.	N.D.	0.5	1.0	25.35

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6001 Bollinger Canyon Rd L4310

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ie	Analyst	Dilution Factor
10237	BTEX/Naphthalene - Soil	SW-846 8260B	1	B172561AA	09/14/2017	01:02	Patrick T Herres	0.98
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201725546996	09/12/2017	10:20	Anastasia K Jaynes	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:16	Anastasia K Jaynes	n.a.
01725	TPH-GRO N. CA soil C6-C12	SW-846 8015B modified	1	17257A34A	09/17/2017	21:23	Jeremy C Giffin	25.35
01150	GC - Bulk Soil Prep	SW-846 5035A Modified	1	201725546996	09/12/2017	10:17	Anastasia K Jaynes	n.a.





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Quality Control Summary

Client Name: ChevronTexaco Reported: 09/22/2017 16:30 Group Number: 1848219

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	mg/kg	mg/kg	mg/kg
Batch number: B172561AA	Sample number	(s): 91997	96-9199803
Benzene	N.D.	0.0005	0.005
Ethylbenzene	N.D.	0.001	0.005
Naphthalene	N.D.	0.001	0.005
Toluene	N.D.	0.001	0.005
Xylene (Total)	N.D.	0.001	0.005
Batch number: 17257A34A	Sample number	(s): 91997	96-9199803
TPH-GRO N. CA soil C6-C12	N.D.	0.5	1.0

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: B172561AA	Sample numbe	r(s): 91997	96-9199803						
Benzene	0.0200	0.0204	0.0200	0.0203	102	101	80-120	1	30
Ethylbenzene	0.0200	0.0199	0.0200	0.0199	100	100	80-120	0	30
Naphthalene	0.0200	0.0203	0.0200	0.0198	101	99	54-132	2	30
Toluene	0.0200	0.0198	0.0200	0.0196	99	98	80-120	1	30
Xylene (Total)	0.0600	0.0591	0.0600	0.0589	98	98	80-120	0	30
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 17257A34A	Sample numbe	r(s): 91997	96-9199803						
TPH-GRO N. CA soil C6-C12	11	8.53	11	9.19	78	84	73-122	7	30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name		Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number:	B172561AA	Sample number(s): 9199796-9199803 UNSPK: P200852									
Benzene		N.D.	0.0208	0.0231			111		80-120		

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



Analysis Report

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Quality Control Summary

Client Name: ChevronTexaco Reported: 09/22/2017 16:30 Group Number: 1848219

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Ethylbenzene	N.D.	0.0208	0.0227			109		80-120		
Naphthalene	N.D.	0.0208	0.0252			121		54-132		
Toluene	N.D.	0.0208	0.0220			106		80-120		
Xylene (Total)	0.00131	0.0625	0.0719			113		80-120		

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report. For dual column analyses, the surrogate (at least one surrogate for multi-surrogate tests) must be within the acceptance limits on at least one of the two columns.

Analysis Name: BTEX/Naphthalene - Soil Batch number: B172561AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9199796	105	108	101	90
9199797	105	106	99	91
9199798	108	111	98	94
9199799	104	103	99	90
9199800	105	103	100	88
9199801	105	104	99	91
9199802	106	105	99	91
9199803	105	104	99	90
Blank	105	107	99	91
LCS	105	107	102	103
LCSD	103	106	102	104
MS	104	107	100	104
Limits:	50-141	54-135	52-141	50-131

Analysis Name: TPH-GRO N. CA soil C6-C12 Batch number: 17257A34A Triffuorotokuene.F

9199796	88
9199797	95
9199798	97
9199799	96
9199800	89
9199801	98
9199802	98
9199803	98
Blank	92

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Quality Control Summary

Client Name: ChevronTexaco Reported: 09/22/2017 16:30 Group Number: 1848219

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report. For dual column analyses, the surrogate (at least one surrogate for multi-surrogate tests) must be within the acceptance limits on at least one of the two columns.

Analysis Name: TPH-GRO N. CA soil C6-C12 Batch number: 17257A34A Triffuoretaluono E

	Trinuorotoiuene-F
LCS	91
LCSD	96
Limits:	50-142

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

	Chev	ron	Ca	lifor	nia	R	eg	io	n	A	na		s	İs	R	eq	<u>ju</u>	e	st/C	ha	i n	n of Cus	stody
🌣 eurofins	Lancaster Labor Environmental	ratories	09	Acc 0817	st. # <u> (</u> 7 ~ <i>D</i>) <u>88</u> 1	<u>0</u>	For I	Eurof roup Ins	fins L # _/ { truction	ancas	ter La	aborat 9 ide corr	tories Sai respond	Envir mple with ci	ronme # rcled ni	ental i j 9 C umbers	ise o } 7 (n ^{iy} 6-2	03_			
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Facility # 9026	,0		WBS														1						
Site Address	Foothill 1	Blud,	Hay	varo	1,0	<u>4</u>							🗌 dnu						2			Results in Dry We	eight needed
Dave Patten Lead Concultant GHD				dimer	round	urface		ي ا			el Clea	leanup					S			Must meet lowest Imits possible for	detection 8260		
	Emen	Juill-	e			Se Se		_ ا		itaine	82	1	ilica Ge	a Gel C			pc	g	8			compounds	irmation
Consultant Project Mgr.	en tton	en								if Con	121	15-1	hout S	h Silica		tes	Meth	Meth	2			Confirm highest h	it by 8260 / 8260
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2) Sample Ide	ntification	Depth	Date	Ected Time	Grat	Com Soil	101	Wate	ΪÖ	Tota	втех	H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-	1-H-T	TPH-I	8260		Total	Disso	Na			6 Remai	rks
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The white copy should accompany samples to Eurofins Lancaster Large of a 5h vir mental. The yellow copy should be retained by the client.

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Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 193961

Client: GHD

	Delive	ry and R	leceipt Information		
Delivery Method:	BASC		Arrival Timestamp:	09/09/2017	<u>9:45</u>
Number of Packages:	1		Number of Projects:	<u>2</u>	
State/Province of Origin:	<u>CA</u>				
· · · · · · · · · · · · · · · · · · ·	Arri	val Conc	lition Summary		
Shipping Container Sealed:		Yes	Sample IDs on COC m	atch Containers:	Yes
Custody Seal Present:		Yes	Sample Date/Times m	atch COC:	Yes
Custody Seal Intact:		Yes	VOA Vial Headspace	≥ 6mm:	N/A
Samples Chilled:		Yes	Total Trip Blank Qty:		0
Paperwork Enclosed:		Yes	Air Quality Samples Pr	esent:	No
Samples Intact:		Yes			
Missing Samples:		No			
Extra Samples:		No			
Discrepancy in Container Qty	on COC:	No			

The	ermometer Types	face Temp)	All Temperatures in °C.				
<u>Cooler #</u>	<u>Thermometer ID</u>	Corrected Temp	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT131	1.0	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
С	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	non-detect
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
Ĺ	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	μg	microgram(s)
m3	cubic meter(s)	μL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Data Qualifiers

Lancaster Laboratories Environmental

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Appendix G Well Survey Data

DESCRIPTION	NORTHING	EASTING	LATITUDE	LONGITUDE	ELEV (PVC)	ELEV (BOX)
$\begin{array}{l} MW-4\\ MW-5\\ MW-6\\ MW-7\\ MW-8\\ MW-9\\ MW-10\\ MW-11\\ MW-12\\ MW-12\\ MW-13\\ MW-13\\ MW-14\\ MW-15\\ MW-15\\ MW-16\\ MW-17\\ MW-16\\ MW-17\\ MW-18\\ MW-19\\ P-1\\ DVE-9\\ DVE-12\\ DVE-9\\ DVE-12\\ DVE-20\\ VP-1\\ VP-2\\ VP-3\\ \end{array}$	2074171.6 2074101.4 2074208.5 2074150.1 2074080.4 2074123.5 2074281.0 2074281.0 2074134.9 2074100.9 2074009.9 2073838.5 2074047.4 2073870.2 2073656.3 2073978.6 2074136.9 2074136.9 2074136.9 2074123.0 2074123.0 2074134.5 2074099.1 2074082.6	6102523.8 6102572.1 6102572.1 6102575.9 6102636.5 6102636.5 6102611.4 6102517.8 6102547.6 6102377.0 6102158.2 6102126.5 6102126.5 610277.0 6102481.1 6102543.7 6102543.7 6102543.7 6102539.7 6102539.7 6102511.5 6102513.3 6102544.1	37.6805865 37.6803954 37.6806902 37.6805299 37.680393 37.6804596 37.6804596 37.6804844 37.6803922 37.6801437 37.6796652 37.6797405 37.6797405 37.6791377 37.6800547 37.6804922 37.680547 37.680555 37.6804538 37.6804538 37.6804835 37.6803870 37.6803431	-122.0866714 -122.0865510 -122.0865066 -122.0864902 -122.0864792 -122.0867787 -122.0867787 -122.0865797 -122.0865797 -122.0871590 -122.0871590 -122.0891524 -122.0868075 -122.0868075 -122.0865077 -122.0865077 -122.0865136 -122.0867136 -122.086734 -122.0867034 -122.0865959	103.89 101.74 104.01 103.17 102.02 103.57 104.74 101.90 101.65 100.80 101.99 98.28 100.56 108.68 100.94 102.34 88.63 102.60 101.77 102.64	102.48 104.34 103.59 102.52 104.07 105.32 103.00 102.35 101.29 102.76 98.79 101.04 108.93 101.21 102.71 89.27 103.32 102.75 103.41 102.9 (GND) 102.2 (GND) 101.8 (GND)
9-22-17						
MW-24	2073682.1	6102298.3	37.6792321	-122.0874214	101.88	102.26





COORDINATES ARE CALIFORNIA STATE PLANE ZONE 3 COORDINATES FROM GPS OBSERVATIONS.

VERTICAL DATUM IS NAVD 88 FROM GPS OBSERVATIONS.



-**⊕-**MW−15





MW-24