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February 1, 2016

RECEIVED
By Alameda County Environmental Health 2:07 pm, Feb 04, 2016

Ms. Dilan Roe
Alameda County Health Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: Well Installation Report
800, 726, and 706 Harrison Street, Oakland, California 94607
Fuel Leak Case No.: RO0000231, RO0000321, and RO0000484
Comingled Plume Claim No. 6678

Dear Ms. Roe,

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have any questions or need additional information, please contact me at 925.790.6912.

Sincerely,

Nicole Arceneaux
Chevron Environmental Management Company – Project Manager

Attachment
Well Installation Report

ARCADIS Design & Consultancy for natural and built assets

Chevron Environmental Management Company

WELL INSTALLATION REPORT

Chevron Facility #351646

706/726/800 Harrison Street

Oakland, California

Case No. RO0000484

February 1, 2016

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WELL INSTALLATION REPORT

Chevron Facility #351646

706/726/800 Harrison Street

Oakland, California

Tamera Rogers

Project Manager

Katherine Brandt, P.G.

Senior Geologist

Prepared for:

Chevron Environmental Management Company

Prepared by:
Arcadis U.S., Inc.
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Tel 408 797 2013
Fax 925 274 1103

Our Ref.:

B0047339.2015

Date:

February 1, 2016

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ACRONYMS AND ABBREVIATIONS

ACEH	Alameda County Environmental Health
ACPWA	Alameda County Public Works Agency
Arcadis	Arcadis U.S., Inc.
AS	air sparge
ASE	Aqua Science Engineers, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
Cambria	Cambria Environmental Technology, Inc.
CDWR	California Department of Water Resources
CPT	cone penetrometer test
DIPE	di-isopropyl ether
EDB	1,2-dibromoethane
EDC	1,2-dichloroethane
ESL	environmental screening level
ETBE	ethyl tert-butyl ether
HASP	Health and Safety Plan
IDW	investigation-derived waste
mg/kg	milligrams per kilogram
MTBE	methyl tert-butyl ether
PID	photo ionization detector
PQL	practical quantitation limit
PVC	polyvinyl chloride
report	Well Installation Report
RPEMP	Remedial Performance Evaluation and Monitoring Plan
site	Chevron Facility #351646, located at 706/726/800 Harrison Street in Oakland, California
SV	soil vapor
SVE	soil vapor extraction

TAME	tert-amyl methyl ether
TBA	tert-butyl alcohol
TPPH	total purgeable petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VE	vapor extraction

1 INTRODUCTION

On behalf of Chevron Environmental Management Company's affiliate, Union Oil Company of California, Arcadis U.S., Inc. (Arcadis) prepared this Well Installation Report (report) for Chevron Facility #351646, located at 706/726/800 Harrison Street in Oakland, California (site; Figures 1 and 2). The scope of work for this project included the installation of 13 air sparge (AS) wells (AS-2 through AS-14), two vapor extraction (VE) wells (VE-4 and VE-5), and three soil vapor (SV) probes (SV-1, SV-2, and SV-3). The wells and SV probes were installed as part of the Remedial Performance Evaluation and Monitoring Plan (RPEMP; Arcadis 2015), which was conditionally approved by Alameda County Environmental Health (ACEH) on March 11, 2015 to address the petroleum hydrocarbon impacted groundwater at the site. The new wells were appropriately screened to meet California Department of Water Resources (CDWR) and Alameda County Public Works Agency (ACPWA) guidelines for monitoring/remediation wells (CDWR 2003).

1.1 Purpose/Remedial Action Objective

This report discusses the well construction of AS-2 through AS-14, VE-4, VE-5, SV-1, SV-2, and SV-3; and provides the analytical results for soil and groundwater samples collected from the newly installed wells.

1.2 Report Organization

The remaining sections of this report are listed below:

- Section 2 describes the site geology and hydrogeology.
- Section 3 discusses the field activities associated with the well and SV probe installations, including health and safety, utility locate, well permits, well installation, and management of investigation-derived waste (IDW).
- Section 4 summarized the soil analytical results.
- Sections 5 and 6 presents Arcadis' conclusions and recommendations, respectively.
- Section 7 lists the references cited throughout this report.

2 SITE DESCRIPTION

The site consists of three properties located in a mixed commercial and residential area at 706, 726, and 800 Harrison Street in Oakland, California (Figure 1). The property locations and boundaries are shown on Figure 2.

The 706 Harrison Street Property is a former ARCO service station owned by Mr. Bo Gin. This property currently contains an asphalt parking lot. Former facilities at the 706 Harrison Street Property included four 1,000-gallon and two 6,000-gallon fuel underground storage tanks (USTs), one steel waste oil UST, product line piping and pump islands, and a station building. The USTs and associated piping were removed in January 1991 (Cambria Environmental Technology, Inc. [Cambria] 1995).

The property located at 726 Harrison Street is a former Shell service station owned by Mr. Peter Yee. This property currently contains an asphalt parking lot and building. Former facilities at the 726 Harrison Street Property included three 4,000-gallon fuel USTs, one 8,000-gallon fuel UST, one steel 1,000-gallon waste oil UST, product line piping and pump islands, and a station building. The USTs and associated piping were removed in October 1995 (Aqua Science Engineers, Inc. [ASE] 2001).

The property located at 800 Harrison Street is an active 76 Station (Unocal) owned by Mr. Muhammad Usman. Current station facilities include a single-story convenience store, three product dispenser islands under two canopies, and two 12,000-gallon double-wall poly-steel gasoline USTs.

2.1 Geology and Hydrogeology

Property-specific well boring logs and cone penetrometer test (CPT) investigation results indicate that the site lithology is consistent with regional lithology. The general site lithology comprises primarily silty sands and fine-grained sands extending to approximately 30 to 38 feet below ground surface (bgs). Deeper CPTs were conducted in the area of 800 Harrison Street and indicate the presence of silt and clay between approximately 30 and 42 feet bgs. Below the clay, fine-grained sand and silty sand are present (Stantec 2009). It is assumed that Merritt Sand lies under the site, based on visual inspections of soil during the investigations (Stantec 2009).

The nearest surface waters to the site are the Oakland Inner Harbor to the south and west and Lake Merritt to the east and northeast. Each body of water is approximately ½ mile from the site (Stantec 2009).

Depth to water beneath the three properties has historically ranged from 10.93 to 20.01 feet bgs. During the second semiannual groundwater monitoring and sampling event in August 2015, average depth-to-water measurements were approximately 18.20 (706 Harrison Street), 20.49 (726 Harrison Street), and 19.59 (800 Harrison Street) feet below top of well casing. A deeper water-bearing zone was encountered at depths of 42 to 50 feet bgs during advancement of the cone penetrometers. Prior to the June 2011 site assessment, no wells were installed in the deeper water-bearing zone. In June 2011, ASE oversaw the installation of monitoring well MW-6 on the 726 Harrison Street Property within the deeper water-bearing zone. MW-6 is screened from 44 to 49 feet bgs (Table 1).

The predominant groundwater gradient observed across all three properties is south-southwest, with a horizontal hydraulic gradient ranging from 0.007 to 0.008 foot per foot (Arcadis 2015). This gradient direction indicates that groundwater flows from 800 Harrison Street toward 726 Harrison Street and from 726 Harrison Street toward 706 Harrison Street.

A groundwater potentiometric surface map from the second semiannual 2015 monitoring event is presented on Figure 3.

3 FIELD ACTIVITIES

The AS and soil vapor extraction (SVE) wells and SV probes were installed during two separate field events. AS-2 through AS-12 and VE-4 and VE-5 were installed between September 30 and October 13, 2014. AS-13, AS-14, SV-1, SV-2, and SV-3 were installed between December 7 and 9, 2015.

3.1 Health and Safety

As required by the Occupational Safety and Health Administration 29, Code of Federal Regulations 1910.120 (Hazardous Waste Operations and Emergency Responses), Arcadis prepared a Health and Safety Plan (HASP) to address the proposed well installation and remedial implementation activities at the site. The HASP is intended to identify and prevent potential safety hazards associated with the project.

3.2 Utility Locate

Underground Services Alert was notified a minimum of 72 hours prior to initiating field activities. For AS-2 through AS-12, VE-4, and VE-5, Cruz Brothers Locators, Inc. of Scotts Valley, California was contracted to conduct an independent utility locate for subsurface features and utilities near the proposed well locations on September 25, 2014. For AS-13, AS-14, SV-1, SV-2, and SV-3, Safe2core of San Jose, California was contracted to conduct an independent utility locate for subsurface features and utilities near the proposed well locations on November 30, 2015.

3.3 Well Permits

Necessary well construction permits were acquired from the ACPWA prior to scheduling the well installation activities. Well permits are included in Appendix A.

3.4 Well Installation

3.4.1 Boring Advancement and Well Construction

Drilling and installation activities were conducted by Cascade Drilling, LP of Richmond, California, a C-57 licensed driller, under the supervision of an Arcadis geologist. Soil borings were advanced using hollow-stem auger drilling methods for all well AS and VE well locations and a hand auger was used to advance the SV boring locations. The soil borings were pre-cleared using an air knife or hand auger to a depth of 8 feet 1 inch bgs.

The AS wells were completed with a 2-inch-diameter Schedule 80 polyvinyl chloride (PVC) riser and a 0.010-inch slot screen. The base of the well screen, which is 2 feet in length, was set at the top of the clay lens. Screen depths ranged from approximately 28 to 35.5 feet bgs, depending on the observed depth of the clay lens. Three feet of blank casing sump was installed below the screen. The annular space was backfilled with sand from the total depth to 1 foot above the screen, followed by 3 feet of hydrated bentonite chips. The wells were sealed with neat cement grout to 1 foot bgs and covered at the surface using sand and asphalt patch pending installation of the AS/SVE system. A 12-inch-diameter traffic-rated well box will be installed following system installation.

The VE wells were completed with a 2-inch-diameter Schedule 80 PVC riser and a 0.010-inch slot screen, which was set from 5 to 15 feet bgs. The annular space was backfilled with sand from the total depth to 1 foot above the screen, followed by 1 foot of hydrated bentonite chips. The wells were sealed with neat cement grout to 1 foot bgs and covered at the surface with sand and asphalt patch. A 12-inch-diameter traffic-rated well box will be installed following installation of the AS/SVE system.

SV-1, SV-2, and SV-3 were completed using a 1-inch-long stainless steel soil vapor screen set in a 1-foot interval of sand pack, allowing approximately 5.5 inches of sand above and below the screen. Teflon tubing was connected to the soil vapor screen and capped at the surface to allow for equilibration of soil vapor concentrations with in-situ conditions. A 1-foot interval of dry, granular bentonite was placed above the sand pack followed by hydrated granular bentonite to the surface. The probes were completed to grade with a 4-inch-diameter traffic-rated well box. Additional details regarding the construction of the AS and VE wells and the SV probes are presented in Table 1 and the boring logs provided in Appendix B. Additionally, Arcadis prepared CDWR Well Completion Reports, which are included in Appendix C.

3.4.2 Soil Sampling and Screening

The soil from the borehole was continuously logged by a geologist in accordance with the Unified Soil Classification System and screened with a photo ionization detector (PID) during well installation activities. The PID field screening results were recorded on the field boring logs in units of parts per million. The field determination for soil sampling was predominantly based on the highest PID readings greater than the background concentration.

Soil samples were collected for laboratory analysis based on the highest probable degree of petroleum hydrocarbon concentration. Therefore, soil samples were collected from each boring location at a frequency of 5 feet if PID readings were not detected above background concentrations and if other indicators of potential hydrocarbon impacts (e.g., staining, odor) were absent. If elevated PID readings or other indicators of potential hydrocarbon impacts were observed during well installation, additional soil samples were collected.

Soil samples were submitted to BC Laboratories (a state-certified laboratory) for the following analyses:

- Total purgeable petroleum hydrocarbons (TPPH) by United States Environmental Protection Agency (USEPA) Method 8260B
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B
- Naphthalene by USEPA Method 8260B
- Fuel oxygenates: tert-butyl alcohol (TBA), methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), and ethanol by USEPA Method 8260B
- 1,2-Dibromoethane (EDB) and 1,2-dichloroethane (EDC) by USEPA Method 8260B

3.5 Management of Investigation-Derived Waste

Soil cuttings from the well installation activities are being temporarily stored on site in seven properly labeled Department of Transportation-approved 55-gallon steel drums, pending disposal facility coordination. Following waste characterization, the IDW will be transported to an appropriately licensed disposal or treatment facility.

4 ANALYTICAL RESULTS

This section presents the soil analytical results for samples collected from AS-2 through AS-14, VE-4, VE-5, SV-1, SV-2, and SV-3 during the well installation activities.

Soil analytical results were compared to commercial/industrial soil environmental screening levels (ESLs for potable water areas based on the site location and California Regional Water Quality Control Board preference. Multiple volatile organic compounds were reported in the soil samples collected during drilling activities. Soil analytical results are summarized in Table 2. Laboratory reports are provided in Appendix D. The soil analytical results are summarized below:

- TPPH was detected in samples above the ESL of 500 milligrams per kilogram (mg/kg), with maximum concentrations in AS-9 (7,000 mg/kg at 20 feet bgs).
- Benzene was detected in samples above the ESL of 0.044 mg/kg, with a maximum concentration in AS-3 (5.9 mg/kg at 17.5 feet bgs).
- Toluene was detected in samples above the ESL of 2.9 mg/kg, with a maximum concentration in AS-2 (200 mg/kg at 18.5 feet bgs).
- Ethylbenzene was detected in samples above the ESL of 3.3 mg/kg, with a maximum concentration in AS-9 (170 mg/kg at 20 feet bgs).
- Total xylenes were detected in samples above the ESL of 2.3 mg/kg, with a maximum concentration in AS-2 (880 mg/kg at 18.5 feet bgs).
- MTBE was detected in samples above the ESL of 0.023 mg/kg, with a maximum concentration in AS-3 (7.5 mg/kg at 17.5 feet bgs).
- TBA was detected in samples above the ESL of 0.075 mg/kg, with a maximum concentration in AS-2 (1.7 mg/kg at 24 feet bgs).

The remaining constituents (ETBE, ethanol, DIPE, TAME, EDB, EDC) were not reported above the practical quantitation limits (PQLs). Soil samples collected from SV-1, SV-2, and SV-3 were not reported above PQLs for all constituents. The PQLs for a soil sample collected from AS-9 at approximately 20 feet bgs exceeded the ESL for benzene, MTBE, and TBA.

5 CONCLUSIONS

Concentrations of TPPH and BTEX did not exceed the ESLs in samples collected between 0 and 15 feet bgs for all sample locations, with the exception of a slightly elevated benzene concentration (0.079 mg/kg) in a sample collected from AS-3 at 15 feet bgs. This is consistent with soil analytical results from samples collected at the 706 and 726 Harrison properties during the 2011 site assessment (Arcadis 2011). Overall, the highest soil concentrations were generally observed in samples collected at 726 Harrison Street at depths between approximately 18 to 22 feet bgs, which are typically representative of smear zone impacts based on average depth-to-water.

6 REFERENCES

Arcadis. 2011. Site Assessment Report, 800, 726, and 706 Harrison Street, Oakland, California, Fuel Leak Case No.: RO0000231, RO0000321, and RO0000484. August 30.

Arcadis. 2015. Remediation Performance Evaluation and Monitoring Plan, 706/726/800 Harrison Street, Oakland, California, ACEH Case #RO0000231/321/484. February 10.

ASE. 2001. Soil and Groundwater Assessment and Corrective Action Plan. December 21.

Cambria. 1995. Subsurface Investigation Report for 706 Harrison Street, Oakland, California. March 10.

CDWR. 2003. Bulletin 118 Updated 2003, California's Groundwater. October.

Stantec. 2009. Site Conceptual Model 800, 726, and 706 Harrison Street Commingled Plume Oakland, California. September 30.

TABLES

Table 1
Well Construction Details
Chevron Facility #351646
706/726/800 Harrison Street
Oakland, California

Well ID	Completion Date	Total Depth (feet bgs)	Screen Interval (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)
726 Harrison Street					
AS-2	10/7/2014	33	28-30	8.5	2
AS-3	10/13/2014	33	28-30	8.5	2
AS-4	10/6/2014	35	30-32	8.5	2
AS-5	10/3/2014	35	30-32	8.5	2
AS-6	10/2/2014	35	30-32	8.5	2
SV-1	12/9/2015	5	4.4 - 4.5	2.0	0.25
SV-2	12/9/2015	5	4.4 - 4.5	2.0	0.25
SV-3	12/9/2015	5	4.4 - 4.5	2.0	0.25
VE-4	10/2/2014	15	5-15	8.5	2
706 Harrison Street					
AS-7	10/9/2014	33	28-30	8.5	2
AS-8	10/9/2014	33	28-30	8.5	2
AS-9	10/13/2014	33	28-30	8.5	2
AS-10	10/10/2014	33	28-30	8.5	2
AS-12	10/10/2014	33	28-30	8.5	2
AS-13	12/9/2015	38.5	33.5 - 35.5	8.0	2
AS-14	12/8/2015	40.5	35.5 - 37.5	8.0	2
VE-5	10/9/2014	15	5-15	8.5	2

Notes:
AS = air sparge
SV = soil vapor
VE = vapor extraction
bgs = below ground surface

Table 2
Soil Analytical Results
Chevron Facility #351646
706/726 Harrison Street
Oakland, California

Sample Location	Sample Date	Sample Depth (feet bgs)	LUFT GC/MS	USEPA 8260B											
			TPPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	Ethanol (mg/kg)	ETBE (mg/kg)	EDB (mg/kg)	EDC (mg/kg)
726 Harrison Street															
AS-2	10/01/14	5.0	<0.15	<0.0038	<0.0038	<0.0038	<0.0075	**0.067**	<0.0038	<0.038	<0.0038	<0.75	<0.0038	<0.0038	<0.0038
	10/07/14	10.0	**0.55**	<0.0050	<0.0050	<0.0050	<0.010	**0.44**	<0.0050	**0.31**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/07/14	15.0	**1.6**	**0.038**	<0.0045	<0.0045	<0.0090	**2.9 A01**	<0.0045	**0.16**	<0.0045	<0.90	<0.0045	<0.0045	<0.0045
	10/07/14	18.5	**5,400 A01**	**2.4 A01**	**200 A01**	**50 A01**	**880 A01**	**0.98 A01**	<0.17 A01	<1.7 A01	<0.17 A01	<34 A01	<0.17 A01	<0.17 A01	<0.17 A01
	10/07/14	24.0	**81 A01**	**0.072**	**0.0087**	**0.0093**	**0.054**	**0.0063**	<0.0050	**1.7 A01**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/07/14	28.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/07/14	30.0	<0.17	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043	<0.043	<0.0043	<0.86	<0.0043	<0.0043	<0.0043
AS-3	10/01/14	5.5	**0.19**	<0.0043	<0.0043	<0.0043	<0.0085	**0.16**	<0.0043	**0.044**	<0.0043	<0.85	<0.0043	<0.0043	<0.0043
	10/13/14	10.0	**0.33**	<0.0044	<0.0044	<0.0044	<0.0089	**0.31**	<0.0044	**0.10**	<0.0044	<0.89	<0.0044	<0.0044	<0.0044
	10/13/14	15.0	**2.1**	**0.079**	<0.0050	<0.0050	<0.010	**1.9 A01**	<0.0050	**0.38**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/13/14	17.5	**3,800 A01**	**5.9 A01**	**26 A01**	**60 A01**	**260 A01**	**7.5 A01**	<5.0 A01	<50 A01	<5.0 A01	<1000 A01	<5.0 A01	<5.0 A01	<5.0 A01
	10/13/14	25.0	**0.63**	**0.30**	**0.0077**	<0.0050	**0.020**	**0.041**	<0.0050	**0.70**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/13/14	30.0	<0.18	<0.044	<0.044	<0.044	<0.0088	<0.044	<0.044	<0.044	<0.044	<0.88	<0.044	<0.044	<0.044
	10/13/14	33.5	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	**0.16**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
AS-4	10/1/14	5.0	<0.17	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043	**0.073**	<0.0043	<0.86	<0.0043	<0.0043	<0.0043
	10/06/14	10.0	**0.19**	<0.0036	<0.0036	<0.0036	<0.0072	<0.0036	<0.0036	<0.036	<0.0036	<0.72	<0.0036	<0.0036	<0.0036
	10/06/14	15.0	**0.64**	**0.010**	<0.0040	<0.0040	<0.0080	**0.041**	<0.0040	<0.040	<0.0040	<0.80	<0.0040	<0.0040	<0.0040
	10/06/14	22.0	**6,200 A01**	**1.0 A01**	**2.5 A01**	**4.6 A01**	**19 A01**	**0.88 A01**	<0.26 A01	<2.6 A01	<0.26 A01	<52 A01	<0.26 A01	<0.26 A01	<0.26 A01
	10/06/14	31.0	**66 A01**	<0.24 A01	**0.29 A01**	**0.38 A01**	**1.6 A01**	<0.24 A01	<0.24 A01	<2.4 A01	<0.24 A01	<49 A01	<0.24 A01	<0.24 A01	<0.24 A01
	10/06/14	33.5	**100 A01**	<0.24 A01	**0.33 A01**	**0.47 A01**	**1.8 A01**	<0.24 A01	<0.24 A01	<2.4 A01	<0.24 A01	<47 A01	<0.24 A01	<0.24 A01	<0.24 A01
AS-5	10/01/14	5.0	<0.15	<0.0039	<0.0039	<0.0039	<0.0077	<0.0039	<0.0039	<0.039	<0.0039	<0.77	<0.0039	<0.0039	<0.0039
	10/03/14	10.0	<0.15	<0.0036	<0.0036	<0.0036	<0.0073	<0.0036	<0.0036	<0.036	<0.0036	<0.73	<0.0036	<0.0036	<0.0036
	10/03/14	15.0	<0.14	<0.0035	<0.0035	<0.0035	<0.0070	<0.0035	<0.0035	<0.035	<0.0035	<0.70	<0.0035	<0.0035	<0.0035
	10/03/14	17.5	**0.39**	**0.014**	<0.0037	<0.0037	<0.0074	**0.026**	<0.0037	<0.037	<0.0037	<0.74	<0.0037	<0.0037	<0.0037
	10/03/14	25.0	**330 A01**	**1.2 A01**	**1.0 A01**	**1.3 A01**	**5.5 A01**	**1.1 A01**	<0.17 A01	<1.7 A01	<0.17 A01	<35 A01	<0.17 A01	<0.17 A01	<0.17 A01
	10/03/14	27.0	**2.5 S01,Z1**	**0.39**	**0.022**	**0.052**	**0.08**	**0.056**	<0.0042	**0.12**	<0.0042	<0.85	<0.0042	<0.0042	<0.0042
	10/03/14	34.0	<0.23	<0.0056	<0.0056	<0.0056	<0.011	<0.0056	<0.0056	<0.056	<0.0056	<1.1	<0.0056	<0.0056	<0.0056
AS-6	09/30/14	5.0	<0.14	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.0034	**0.091**	<0.0034	<0.68	<0.0034	<0.0034	<0.0034
	10/02/14	10.0	<0.16	<0.0040	<0.0040	<0.0040	<0.0081	<0.0040	<0.0040	<0.040	<0.0040	<0.81	<0.0040	<0.0040	<0.0040
	10/02/14	15.0	<0.17	<0.0042	<0.0042	<0.0042	<0.0084	<0.0042	<0.0042	**0.13**	<0.0042	<0.84	<0.0042	<0.0042	<0.0042
	10/02/14	20.0	**0.16**	<0.0038	<0.0038	<0.0038	<0.0075	<0.0038	<0.0038	<0.038	<0.0038	<0.75	<0.0038	<0.0038	<0.0038
	10/02/14	22.0	**2,100 A01**	**1.2 A01**	**0.67 A01**	**5.0 A01**	**11 A01**	**1.5 A01**	<0.15 A01	<1.5 A01	<0.15 A01	<30 A01	<0.15 A01	<0.15 A01	<0.15 A01
	10/02/14	25.0	**730 A01**	**0.7 A01**	**0.26 A01**	**1.3 A01**	**2.9 A01**	**1.6 A01**	<0.18 A01	<1.8 A01	<0.18 A01	<35 A01	<0.18 A01	<0.18 A01	<0.18 A01
	10/02/14	36.0	**0.16**	<0.0040	<0.0040	<0.0040	<0.0080	**0.018**	<0.0040	<0.040	<0.0040	<0.80	<0.0040	<0.0040	<0.0040
SV-1	12/09/15	2.0	<0.20 S08, Z1	<0.0050 S08,Z1	<0.0050 S08,Z1	<0.0050 S08,Z1	<0.010 S01,Z1	<0.0050 S08,Z1	<0.0050 S08,Z1	<0.050	<0.0050 S08,Z1	<1.0 S08,Z1	<0.0050 S08,Z1	<0.0050 S08,Z1	<0.0050 S08,Z1
	12/09/15	5.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
SV2	12/09/15	2.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/09/15	5.0	<0.17	<0.0042	<0.0042	<0.0042	<0.0083	<0.0042	<0.0042	<0.042	<0.0042	<0.83	<0.0042	<0.0042	<0.0042
SV-3	12/09/15	2.0	<0.17	<0.0042	<0.0042	<0.0042	<0.0085	<0.0042	<0.0042	<0.042	<0.0042	<0.85	<0.0042	<0.0042	<0.0042
	12/09/15	5.0	<0.17	<0.0042	<0.0042	<0.0042	<0.0084	<0.0042	<0.0042	<0.042	<0.0042	<0.84	<0.0042	<0.0042	<0.0042
VE-4	10/02/14	5.0	<0.14	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.0034	<0.034	<0.0034	<0.68	<0.0034	<0.0034	<0.0034
	10/02/14	10.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	**0.22**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/02/14	15.0	<0.17	<0.0041	<0.0041	<0.0041	<0.0083	<0.0041	<0.0041	**0.20**	<0.0041	<0.83	<0.0041	<0.0041	<0.0041
706 Harrison Street															
AS-7	10/08/14	5.0	<0.14	<0.0036	<0.0036	<0.0036	<0.0072	<0.0036	<0.0036	<0.036	<0.0036	<0.72	<0.0036	<0.0036	<0.0036
	10/09/14	10.0	<0.14	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.0034	<0.034	<0.0034	<0.68	<0.0034	<0.0034	<0.0034
	10/09/14	15.0	<0.15	<0.0037	<0.0037	<0.0037	<0.0075	<0.0037	<0.0037	<0.037	<0.0037	<0.75	<0.0037	<0.0037	<0.0037
	10/09/14	21.0	**26 A01**	**0.20**	**0.0092**	**0.053**	**0.034**	**0.62 A01**	<0.0038	**0.59**	<0.0038	<0.77	<0.0038	<0.0038	<0.0038
	10/09/14	27.0	<0.15	<0.0038	<0.0038	<0.0038	<0.0076	**0.0056**	<0.0038	**0.25**	<0.0038	<0.76	<0.0038	<0.0038	<0.0038
	10/09/14	32.0	**0.15**	**0.0045**	<0.0039	<0.0039	<0.0077	**0.13**	<0.0039	**0.16**	<0.0039	<0.77	<0.0039	<0.0039	<0.0039
AS-8	10/08/14	5.0	<0.15	<0.0037	<0.0037	<0.0037	<0.0075	<0.0037	<0.0037	<0.037	<0.0037	<0.75	<0.0037	<0.0037	<0.0037
	10/09/14	10.0	<0.15	<0.0037	<0.0037	<0.0037	<0.0074	<0.0037	<0.0037	<0.037	<0.0037	<0.74	<0.0037	<0.0037	<0.0037
	10/09/14	15.0	<0.14	<0.0034	<0.0034	<0.0034	<0.0069	<0.0034	<0.0034	**0.10**	<0.0034	<0.69	<0.0034	<0.0034	<0.0034
	10/09/14	20.0	<0.15	<0.0038	<0.0038	<0.0038	<0.0075	**0.005**	<0.0038	**0.051**	<0.0038	<0.75	<0.0038	<0.0038	<0.0038
	10/09/14	26.0	<0.16	<0.0041	<0.0041	<0.0041	<0.0082	<0.0041	<0.0041	**0.054**	<0.0041	<0.82	<0.0041	<0.0041	<0.0041
	10/09/14	30.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
AS-9	10/08/14	5.0	<0.13	<0.0032	<0.0032	<0.0032	<0.0064	<0.0032	<0.0032	**0.056**	<0.0032	<0.64	<0.0032	<0.0032	<0.0032
	10/13/14	10.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/13/14	15.0	<0.18	<0.044	<0.044	<0.044	<0.0088	<0.044	<0.044	<0.044	<0.044	<0.88	<0.044	<0.044	<0.044
	10/13/14	20.0	**7,000 A01**	<25 A01	**130 A01**	**170 A01**	**820 A01**	<25 A01	<25 A01	<250 A01	<25 A01	<5000 A01	<25 A01	<25 A01	<25 A01
	10/13/14	25.0	<0.20	<0.0050	**0.015**	<0.0050	**0.012**	<0.0050	<0.0050	**0.71**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/13/14	30.0	<0.18	<0.0044	<0.0044	<0.0044	<0.0088	<0.0044	<0.0044	**0.18**	<0.0044	<0.88	<0.0044	<0.0044	<0.0044
	10/13/14	33.5	<0.17	<0.0042	<0.0042	<0.0042	<0.0084	<0.0042	<0.0042	**0.13**	<0.0042	<0.84	<0.0042	<0.0042	<0.0042

Table 2
Soil Analytical Results
Chevron Facility #351646
706/726 Harrison Street
Oakland, California

Sample Location	Sample Date	Sample Depth (feet bgs)	LUFT GC/MS	USEPA 8260B										
			TPPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	Ethanol (mg/kg)	ETBE (mg/kg)	EDB (mg/kg)	EDC (mg/kg)
AS-10	10/08/14	5.0	<0.15	<0.0036	<0.0036	<0.0036	<0.0073	<0.0036	<0.0036	<0.036	<0.0036	<0.73	<0.0036	<0.0036	<0.0036
	10/10/14	10.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	**0.13**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/10/14	15.0	<0.15	<0.0036	<0.0036	<0.0036	<0.0073	<0.0036	<0.0036	**0.044**	<0.0036	<0.73	<0.0036	<0.0036	<0.0036
	10/10/14	20.0	**850 A01**	<0.17 A01	**0.27 A01**	**0.42 A01**	**2.3 A01**	<0.17 A01	<0.17 A01	<1.7 A01	<0.17 A01	<33 A01	<0.17 A01	<0.17 A01	<0.17 A01
	10/10/14	26.5	<0.20	<0.0050	**0.0077**	<0.0050	**0.011**	<0.0050	<0.0050	**0.50**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/10/14	30.0	**0.35**	<0.0036	**0.032**	**0.011**	**0.055**	<0.0036	<0.0036	**0.069**	<0.0036	<0.72	<0.0036	<0.0036	<0.0036
AS-11	10/01/14	5.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/06/14	10.0	<0.10	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	<0.0025	<0.025	<0.0025	<0.50	<0.0025	<0.0025	<0.0025
	10/06/14	15.0	<0.17	<0.0042	<0.0042	<0.0042	<0.0084	<0.0042	<0.0042	**0.14**	<0.0042	<0.84	<0.0042	<0.0042	<0.0042
	10/06/14	17.0	**1.1**	<0.0034	<0.0034	**0.0036**	<0.0067	<0.0034	<0.0034	<0.034	<0.0034	<0.67	<0.0034	<0.0034	<0.0034
	10/06/14	26.0	**12 A01**	**0.40**	**0.22 A01**	**0.33**	**1.1**	**0.41**	<0.0044	**0.85**	<0.0044	<0.87	<0.0044	<0.0044	<0.0044
	10/06/14	30.0	**1.1**	**0.051**	**0.17**	**0.043**	**0.23**	**0.057**	<0.0039	**0.48**	<0.0039	<0.79	<0.0039	<0.0039	<0.0039
AS-12	10/08/14	5.0	<0.17	<0.0042	<0.0042	<0.0042	<0.0084	<0.0042	<0.0042	<0.042	<0.0042	<0.84	<0.0042	<0.0042	<0.0042
	10/10/14	10.0	<0.13	<0.0032	<0.0032	<0.0032	<0.0065	<0.0032	<0.0032	<0.032	<0.0032	<0.65	<0.0032	<0.0032	<0.0032
	10/10/14	15.0	<0.16	<0.0041	<0.0041	<0.0041	<0.0081	<0.0041	<0.0041	**0.12**	<0.0041	<0.81	<0.0041	<0.0041	<0.0041
	10/10/14	20.0	**0.31**	**0.028**	<0.0036	<0.0036	<0.0072	<0.0036	<0.0036	<0.036	<0.0036	<0.72	<0.0036	<0.0036	<0.0036
	10/10/14	25.0	**3.9 A01**	**0.59 A01**	**0.061**	**0.17**	**0.28**	**0.09**	<0.0038	**0.45**	<0.0038	<0.75	<0.0038	<0.0038	<0.0038
	10/10/14	29.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	**0.12**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
AS-13	12/07/15	5.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/08/15	10.0	<0.13	<0.0033	<0.0033	<0.0033	<0.0066	<0.0033	<0.0033	<0.033	<0.0033	<0.66	<0.0033	<0.0033	<0.0033
	12/08/15	15.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/08/15	17.5	**1.8**	<0.0039	<0.0039	<0.0039	<0.0079	<0.0039	<0.0039	<0.039	<0.0039	<0.79	<0.0039	<0.0039	<0.0039
	12/09/15	20.0	**980 A01**	**0.006**	<0.0037	**0.091**	<0.0074	<0.0037	<0.0037	<0.037	<0.0037	<0.74	<0.0037	<0.0037	<0.0037
	12/09/15	25.0	<0.17	<0.0043	<0.0043	<0.0043	<0.0087	<0.0043	<0.0043	<0.043	<0.0043	<0.87	<0.0043	<0.0043	<0.0043
	12/09/15	30.0	<0.15	<0.0037	<0.0037	<0.0037	<0.0074	<0.0037	<0.0037	<0.037	<0.0037	<0.74	<0.0037	<0.0037	<0.0037
	12/09/15	35.0	<0.15	<0.0037	<0.0037	<0.0037	<0.0075	**0.014**	<0.0037	<0.037	<0.0037	<0.75	<0.0037	<0.0037	<0.0037
	12/09/15	35.5	<0.14	<0.0034	<0.0034	<0.0034	<0.0069	**0.17**	<0.0034	<0.034	<0.0034	<0.69	<0.0034	<0.0034	<0.0034
AS-14	12/07/15	5.0	<0.18	<0.0044	<0.0044	<0.0044	<0.0089	<0.0044	<0.0044	<0.044	<0.0044	<0.89	<0.0044	<0.0044	<0.0044
	12/08/15	10.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/08/15	15.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/08/15	20.0	**23 A01**	**0.4**	**0.45**	**0.3**	**1.0**	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/08/15	25.0	**5.2 A01**	**0.33**	**0.15**	**0.12**	**0.40**	**0.10**	<0.0045	**0.88**	<0.0045	<0.90	<0.0045	<0.0045	<0.0045
	12/08/15	30.0	**1.6**	**0.13**	**0.1**	**0.06**	**0.23**	**0.024**	<0.0050	**0.31**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	12/08/15	35.0	**6.8 A01**	**0.11**	**0.1**	**0.085**	**0.31**	**0.026**	<0.0050	**0.17**	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
VE-5	10/02/14	5.0	<0.20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050
	10/09/14	10.0	<0.16	<0.0041	<0.0041	<0.0041	<0.0082	<0.0041	<0.0041	**0.22**	<0.0041	<0.82	<0.0041	<0.0041	<0.0041
	10/09/14	15.0	<0.15	<0.0038	<0.0038	<0.0038	<0.0076	<0.0038	<0.0038	**0.11**	<0.0038	<0.76	<0.0038	<0.0038	<0.0038
ESL (potable)			**770**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**		**0.075**					
ESL (nonpotable)			**1,000**	**1.2**	**9.3**	**4.7**	**11**	**8.4**		**110**					

Notes:
bgs = below ground surface
BOLD = Indicates analytical result is above reporting limits.
DIPE = di-isopropyl ether
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
ESL (potable) = Table C. Environmental Screening Levels, Deep Soils (>3 meters bgs), groundwater is a current or potential source of drinking water.
ESL (nonpotable) = Table D. Environmental Screening Levels, Deep Soils (>3 meters bgs), groundwater is not a current or potential source of drinking water.
ETBE = ethyl tert-butyl ether
LUFT GC/MS = Leaking Underground Fuel Tanks Gas chromatography-mass spectrometry
mg/kg = milligrams per kilogram
MTBE = methyl tert-butyl ether
TAME = tert-amyl methyl ether
TBA = tert-butyl alcohol
TPPH = total purgeable petroleum hydrocarbons
USEPA = United States Environmental Protection Agency
<25 = Not detected above practical quantitation limit (PQL).
830 = above PQL

2.9	Above the Commercial/Industrial Soils ESL (potable).
9.3	Above the Commercial/Industrial Soils ESL (no potable).
<25	PQL exceeds the ESL.

A01 = Detection and quantitation limits are raised due to sample dilution.
S01 = Sample result is not within the quantitation range of the method.
S08 = The internal standard on the sample was not within the control limits.
Z1 = Sample was analyzed three times and internal standards were low all three times.

FIGURES

REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. □UAD., OAKLAND WEST, CALIFORNIA, 1993.

0 2000' 4000'

Appro□mate S□ale: 1 □□. = 2000 □t.

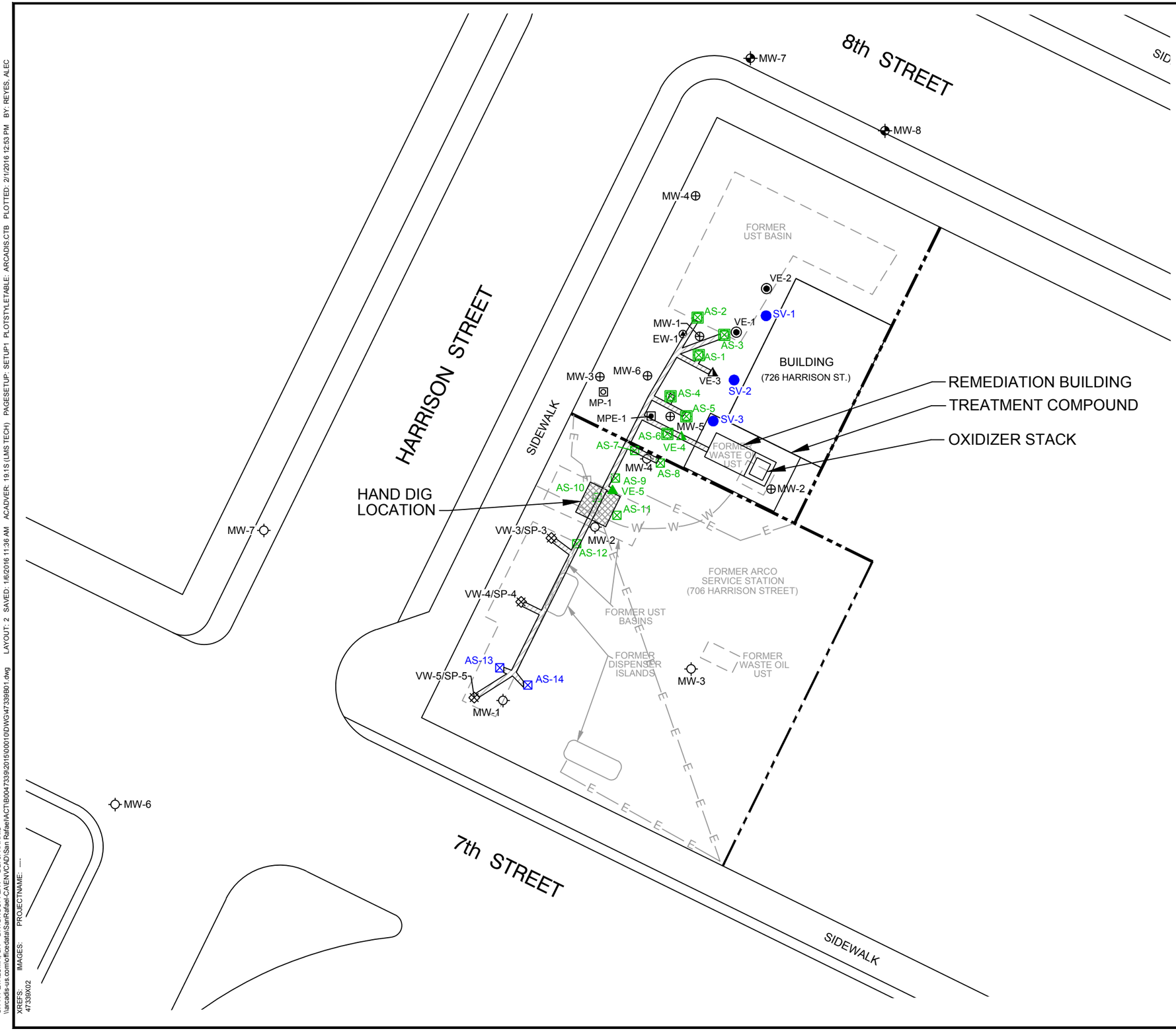
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE 1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\j.harris\Desktop\ENVCAD\B0047339\2012\0000211\2\DWG\47339N01.dwg LAYOUT: 1 SAVED: 3/9/2012 1:32 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 3/9/2012 1:32 PM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
Oakla d West.jpg



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- VW-3/SP-3 SOIL VAPOR/SPARGE WELL (GIN)
- AS-1 AIR SPARGE WELL (GIN)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL (YEE)
- SV-1 SOIL VAPOR WELL (YEE)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 PILOT TEST MONITORING POINT
- VE-1 VAPOR EXTRACTION WELL (DESTROYED)
- SYSTEM TRENCHING
- W WATER UTILITY LINE
- E ELECTRICAL UTILITY LINE

NOTES:

1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83
.
3. AS-13, AS-14, SV-1, SV-2, AND SV-3 NOT SURVEYED. LOCATIONS ARE APPROXIMATE.
4. WELLS MARKED IN **GREEN** WERE INSTALLED BETWEEN SEPTEMBER 30 AND OCTOBER 13, 2014. WELLS MARKED IN **BLUE** WERE INSTALLED BETWEEN DECEMBER 7 AND 9, 2015.

0 30' 60'

SCALE 1"=30'

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
CHEVRON FACILITY #351646
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

SITE PLAN SHOWING WELL LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: PETALUMA, CA DIVGROUP: ENV DB: J. HARRIS
\\arcadis-us.com\officedata\SanRafael-CA\ENVCAD\San Rafael\ACTIVE\B0047339\2015\00010\DWG\47339B01.dwg LAYOUT: 2 SAVED: 1/6/2016 11:36 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/1/2016 12:53 PM BY: REYES, ALEC
XREFS: IMAGES: PROJECTNAME: ---
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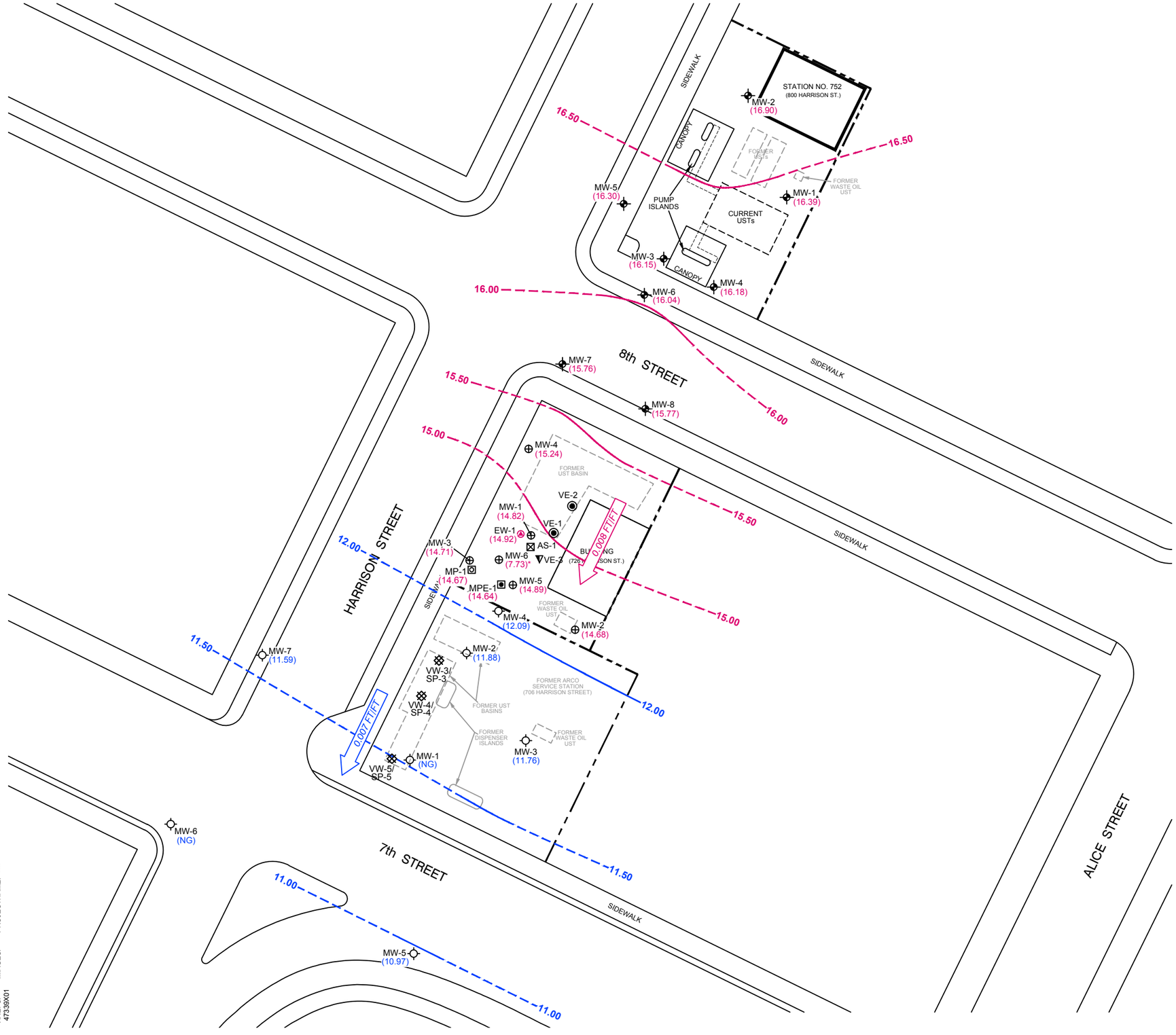


LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 GROUNDWATER MONITORING WELL (YEE SITE)
- EW-1 EXTRACTION WELL (YEE SITE)
- MW-1 GROUNDWATER MONITORING WELL (GIN SITE)
- VW-3/SP-3 SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE) (YEE SITE)
- MP-1 PILOT TEST MONITORING POINT (YEE SITE)
- VE-1 VAPOR EXTRACTION WELL (YEE SITE)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL (YEE SITE)
- AS-1 AIR SPARGE WELL (YEE SITE)
- (12.09) GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL (FT MSL)
- 12.00 GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- 0.007 FT/FT APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT (FOOT PER FOOT)
- (NG) NOT GAUGED
- * NOT USED IN GROUNDWATER CONTOURING AND GRADIENT CALCULATION

NOTES:

1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'. MUIR SURVEY COMPLETED A SURVEY ON 8/21/13.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
3. MW-6 IS NOT USED IN THE GROUNDWATER CONTOURS BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.
4. GROUNDWATER CONTOURS FOR 800/726 HARRISON STREET SEPARATE FROM 706 HARRISON STREET DUE TO SURVEYING DISCREPANCIES. 706 HARRISON TO BE RE-SURVEYED IN 2015.

0 50' 100'

GRAPHIC SCALE

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
CHEVRON FACILITY 351646
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SAN RAFAEL, CA (PETALUMA) DIV/GROUP: ENVCAD DB: J. HARRIS, R. HUBATCH, J. HARRIS
C:\Users\j.harris\Desktop\ENVCAD\B0047339\2015\000101\DWG\47339W01.dwg LAYOUT: 3 SAVED: 9/2/2015 7:32 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: SETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 1/6/2016 11:34 AM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
47339X01

APPENDIX A

ACPWA Permits

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

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

Application Approved on: 11/19/2015 By jamesy

Permit Numbers: W2015-1029
Permits Valid from 12/07/2015 to 12/11/2015

Application Id:	1447713561414	**City of Project Site:**	Oakland
Site Location:	706 Harrison St, Oakland, CA		
Project Start Date:	12/07/2015	**Completion Date:**	12/11/2015
Assigned Inspector:	Contact Lindsay Furuyama at (925) 956-2311 or Lfuruyama@groundzonees.com		

Applicant:	Arcadis - Christine Meyer 2999 Oak Rd #300, Walnut Creek, CA 94597	**Phone:** 925-296-7830
Property Owner:	Bo Gin 342 Lester Ave, Oakland, CA 94606	**Phone:** --
Client:	CEMC Nicole Arceneaux 6101 Bollinger Canyon Rd #5119, San Ramon, CA 94583	**Phone:** 925-790-6912

	Total Due:	$265.00
Receipt Number: WR2015-0560	**Total Amount Paid:**	$265.00
Payer Name : Christine Meyer	Paid By: CHECK	**PAID IN FULL**

Works Requesting Permits:

Remediation Well Construction-Injection - 2 Wells
Driller: Cascade - Lic #: 938110 - Method: other **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2015-1029	11/19/2015	03/06/2016	AS13	8.00 in.	2.00 in.	28.00 ft	40.00 ft
W2015-1029	11/19/2015	03/06/2016	AS14	8.00 in.	2.00 in.	28.00 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. 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 (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 60 days. Include permit number and site map.

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

5. 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.

6. 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.

7. Minimum seal depth (Neat Cement Seal) is 2 feet below ground surface (BGS).

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

9. 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.

10. 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.

11. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a 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.

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

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

Application Approved on: 11/19/2015 By jamesy

Permit Numbers: W2015-1030
Permits Valid from 12/07/2015 to 12/11/2015

Application Id: 1447714672906 **City of Project Site:** Oakland
Site Location: 726 Harrison St, Oakland, CA
Project Start Date: 12/07/2015 **Completion Date:** 12/11/2015
Assigned Inspector: Contact Lindsay Furuyama at (925) 956-2311 or Lfuruyama@groundzonees.com

Applicant: Arcadis - Christine Meyer **Phone:** 925-296-7830
2999 Oak Rd #300, Walnut Creek, CA 94597
Property Owner: Kin Chan Peter Yee **Phone:** --
1000 San Antonio Ave, Alameda, CA 94501
Client: CEMC Nicole Arceneaux **Phone:** 925-790-6912
6101 Bollinger Canyon Rd #5119, San Ramon, CA 94583

Total Due: $265.00
Receipt Number: WR2015-0561 **Total Amount Paid:** $265.00
Payer Name : Arcadis Paid By: CHECK **PAID IN FULL**

Works Requesting Permits:

Well Construction-Vapor monitoring well-Vapor monitoring well - 3 Wells
Driller: Cascade - Lic #: 938110 - Method: Hand **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2015-1030	11/19/2015	03/06/2016	SV1	3.25 in.	0.25 in.	4.00 ft	5.00 ft
W2015-1030	11/19/2015	03/06/2016	SV2	3.25 in.	0.25 in.	4.00 ft	5.00 ft
W2015-1030	11/19/2015	03/06/2016	SV3	3.25 in.	0.25 in.	4.00 ft	5.00 ft

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (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 60 days, including permit number and site map.

3. 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.

4. 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.

5. 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.

6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.

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

8. 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.

9. 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.

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.

12. Vapor monitoring wells above water level constructed with tubing maybe be backfilled with pancake-batter consistency bentonite. Minimum surface seal thickness is two inches of cement grout around well box.

Vapor monitoring wells above water level constructed with pvc pipe shall have a minimum seal depth (Neat Cement Seal) of 2 feet below ground surface (BGS). Minimum surface seal thickness is two inches of cement grout around well box. All other conditions for monitoring well construction shall apply.

APPENDIX B

Boring Logs

Date Start/Finish: 10/07/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5 inch
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 feet bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: **AS-2**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
						Asphalt
						Fine to medium sand with some silt, chunks of gravel average ~1" in diameter, some larger rocks, moist, no odor, no staining, dark yellowish brown (10YR4/4)
			Air knife			
5	-5	AS-2-5.0		9.0		Fine to medium sand with some silt, well sorted, moist, strong petroleum like odor, staining present, very dark greenish gray (GLEY1 3/1), some mottling with black colored areas (GLEY1 2.5/)
						Fine to medium sand with some silt, well sorted, moist, no odor, no staining, yellowish brown (10YR5/6)
						Becomes rocky, difficult to air knife
						Medium sand with little silt, moist, odor present, dark greenish gray (GLEY1 4/2)
10	-10	AS-2-10.0	4/4	10.3		
				25.2		
				18.6		
				34		
			4/4	27.6		
				45.7		
				45.6		Medium sand with silt, slightly plastic, moist, odor present, some staining, very dark greenish gray (GLEY1 3/1)
15	-15	AS-2-15.0		33.4		
				53.0		
			2/2	115.0		Medium sand with little silt, loose, low cohesiveness, moist, odor present, greenish gray (GLEY1 5/1)
				33.9		
		AS-2-18.5	1.5/2			

Well/Boring Construction: Grout; Sch 80 PVC riser

Remarks: Lots of slough in top 2 feet of most (?); difficult to (?) with DP (sand is very hard) starting around 10 feet bgs. At 28 feet, having difficulty w/ slough. At 30 feet, too difficult to proceed through slough.

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: 10/07/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5 inch
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 feet bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

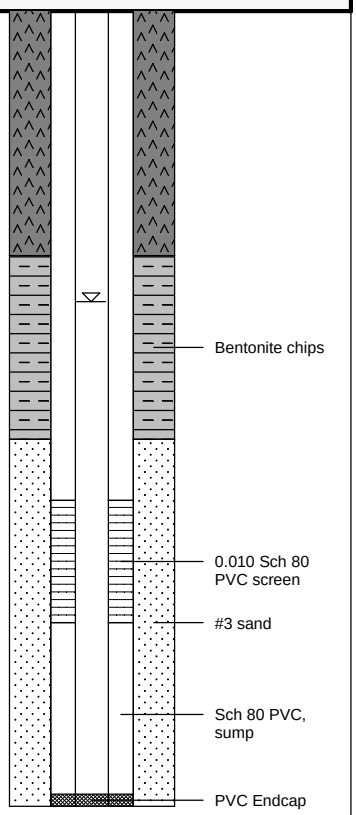
Well/Boring ID: **AS-2**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
			1.5/2	2000		
				3000.0		
			2/2			
		AS-2-24.0		366.5		
25	-25		2/2	71.8		Wet, color change to darker greenish gray (GLEY 1 3/1)
				5.7		Grades to very moist at 25.5 to 26 ft bgs.
			2/2	3.7		Becomes wet again at 26.5 ft bgs.
						Dries to moist at 27 ft bgs.
		AS-2-28.0		4.0		Begins to mottle with unstained sand, moist, no odor, dark yellowish brown
			2/2	2.5		
30	-30	AS-2-30.0		1.9		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: Lots of slough in top 2 feet of most (?); difficult to (?) with DP (sand is very hard) starting around 10 feet bgs. At 28 feet, having difficulty w/ slough. At 30 feet, too difficult to proceed through slough.

Date Start/Finish: 10/01/2014 & 10/13/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35 feet bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard & Rob Moniz

Well/Boring ID: AS-3

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
						Asphalt
						Fine to Medium sand with some silt, large rocks and chunks of gravel (1"-9" in diameter), mostly no odor, no staining
			Air knife			Large (8" diameter) rock encountered at 3 ft bgs.
5	-5	AS-3-5.5		9.0		Fine to Medium sand with some silt, well sorted, moist, strong petroleum like odor and staining (from 5-6 ft bgs), XXX (GLEY 1 3/1) with some black mottling.
			1/2			Trace red brick fragments, strong odor at 8.5 ft bgs.
10	-10	AS-3-10.0		10.3		
				25.2		No more brick fragments at 11 ft bgs.
				18.6		
			4/5	34		Color change to GLEY 1 4/1 at 12.5 ft bgs.
				27.6		
				45.7		
				45.6		
15	-15	AS-3-15.0		33.4		
				53.0		
				115.0		
		AS-3-17.5	4.5/5			
				33.9		
						Slight increase in fines, color change to dark olive brown at 18.5 ft bgs.

Well/Boring Construction: Cold Patch; Native Sand; Grout; Sch 80 PVC riser

Remarks:

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: 10/01/2014 & 10/13/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35 feet bgs
Surface Elevation: NA

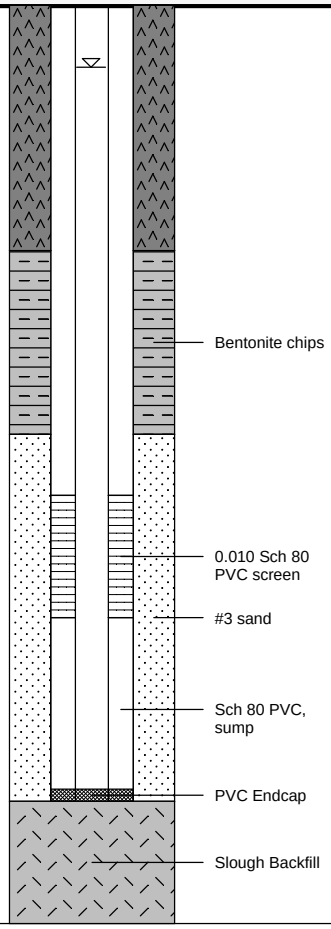
Descriptions By: Adam Kinnard & Rob Moniz

Well/Boring ID: **AS-3**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
			4/5	2000		Becomes wet at 21 ft bgs.
				3000.0		Trace clay with little silt, moist at 21.4 ft bgs
				366.5		Color change to GLEY 1 4/1 at 23 ft bgs.
25	-25	AS-3-25.0		71.8		Becomes wet, trace fines, color change to GLEY 1 4/1 at 25 ft bgs.
			4/5	5.7		Little fines, weak odor, mottled GLEY and light reddish brown at 26 ft bgs.
				3.7		
				4.0		Color change to dark reddish brown with orange and red staining at 27.5 ft bgs.
				2.5		
30	-30	AS-3-30.0		1.9		Loose, wet, trace fines, no odor at 30 ft bgs.
			4.5/5			Clayey sand with trace silt, very fine to medium sand, moist, medium density, low plasticity, yellowish brown
		AS-3-33.5				
35	-35					



Remarks:

ARCADIS
Infrastructure, environment, facilities

Project Number: B0047339
Data File:
Template:
Date: 12/12/2014
Created by: Emily Kuhr

Date Start/Finish: 10/01/2014 & 10/06/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: AS-4

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0					Asphalt	
						Fill material, coarse sand size with chunks of concrete (up to 2" in diameter), dry, 7.5YR7/6	
			Air knife			Fine to medium sand with little silt, well sorted, moist, no odor, mostly strong brown (7.5YR 4/0) with dark gray areas (7.5YR 4/1)	
5	-5	AS-4-5.0		0.1		Fine to medium sand with little silt, well sorted, loose, moist, no odor, strong brown (7.5YR 5/8) slight color variation (small grayish and orange streaks)	
				2.8			
10	-10	AS-4-10.0	4/4	3.0			
				1.3			
				1.0		Fine to medium sand with little silt, well sorted, loose, moist, odor, dark greenish gray (GLEY1 4/1) some mottling with strong brown	
				6.6			Grout
			4/4	6.8			
15	-15	AS-4-15.0		18.5		Fine to medium sand with little silt, well sorted, loose, moist, strong odor, intense blue/gray (GLEY1 4/2)	Sch 80 PVC riser
				36.4			
			3/3	45.1			
				300.4		Medium sand with some fine sand, well sorted, moist, strong odor, intense blue/gray (GLEY1 4/2)	
				3407.0			
20	-20						

Remarks:

ARCADIS
Infrastructure, environment, facilities

Project Number: B0047339
Data File:
Template:
Date: 12/12/2014
Created by: Emily Kuhr

Date Start/Finish: 10/01/2014 & 10/06/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35 ft bgs
Surface Elevation: NA

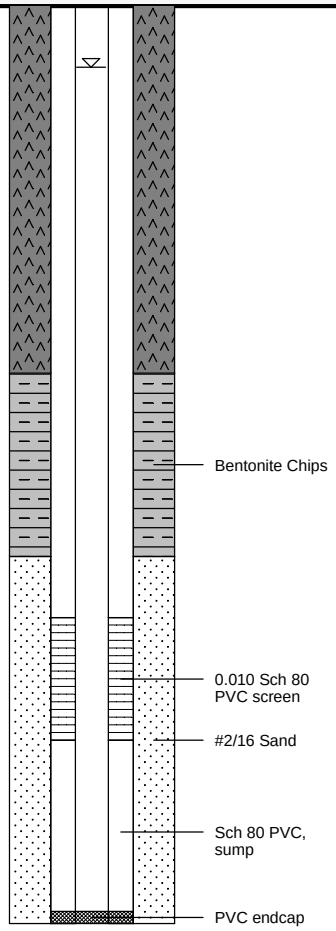
Descriptions By: Adam Kinnard

Well/Boring ID: **AS-4**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
			3/3	609.2		
				3097.0		
		AS-4-22.0		3133.0		
			2.5/3	2994.0		
				3231.0		Some color mottling present, bluish gray, black, and dark brown
25	-25			5958.0		Free water encountered at 25 ft bgs.
			2/3	457.2		
		AS-4-27.0		1247.0		Dries to moist only at 27 ft bgs.
				360.0		Free water encountered at 28 ft bgs.
			2/3	135.1		Dries to moist soil only at 29 ft bgs.
30	-30					Medium sand with some fine sand, very slight odor, dark grayish brown (10YR4/2)
		AS-4-31.0		15.3		Medium sand with some fine sand, very moist, strong odor, mottled color, primarily bluish gray with some darkish gray brown (10YR4/2)
				677.4		
			1.5/3	264.3		
				107.8		
		AS-4-33.5				Medium sand with some fine sand, very moist, little odor, mottled color, primarily dark brown (7.5YR3/4)
				114.7		
35	-35					



Well/Boring Construction

ARCADIS
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 10/01/2014-10/03/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: **AS-5**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
						Asphalt	
						Fill material, coarse sand size with chunks of concrete (up to 2" in diameter), dry, strong brown (7.5YR7/6)	
						Fine to medium sand with little silt, well sorted, moist, no odor, strong brown (7.5YR 4/6) with dark gray areas (7.5YR 4/1)	
			Air knife				
5	-5	AS-5-5.0		0		Fine to medium sand with little silt, well sorted, loose, very moist, no odor, slightly mottled color: mostly strong brown (7.5YR 5/8) with some gray and orange veins	
						Fine to medium sand with little silt, well sorted, loose, slightly moist, no odor, slightly mottled color: mostly strong brown (7.5YR 5/8) with some gray and orange veins	
				0.7			
10	-10	AS-5-10.0	4/4	1.4			
				5.5			
				0.9		Medium sand, well sorted, slightly moist, slight odor, dark grayish brown (7.5YR4/2)	
				260			Grout
			4/4	3.1			
15	-15	AS-5-15.0		2.9		Medium sand, well sorted, slightly moist, slight odor, greenish gray (GLEY2 5/2)	2", Sch 80 PVC riser
				14.2			
						Fine sand with little silt, well sorted, moist, no odor, light gray to strong brown (7.5YR4/6)	
				53.1		Medium sand, well sorted, slightly moist, very strong odor, black staining on surface of soil, greenish gray (GLEY2 5/2)	
		AS-5-17.5	3/3				
				35.1			

Remarks:

ARCADIS
Infrastructure, environment, facilities

Project Number: B0047339
Data File:
Template:
Date: 12/12/2014
Created by: Emily Kuhr

Date Start/Finish: 10/01/2014-10/03/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35 ft bgs
Surface Elevation: NA

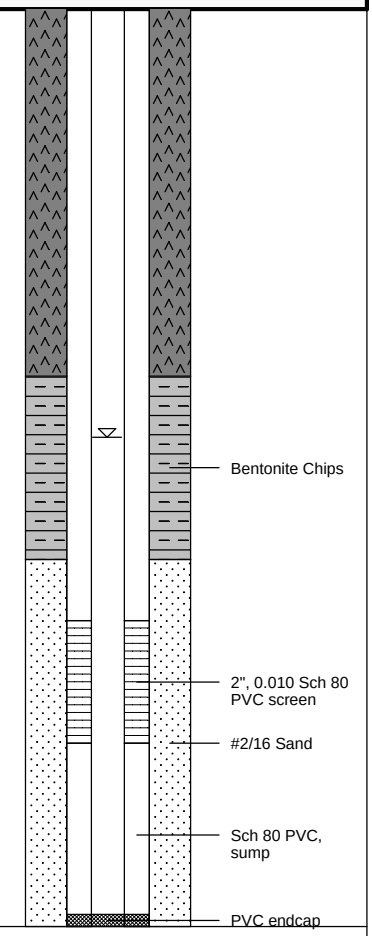
Descriptions By: Adam Kinnard

Well/Boring ID: **AS-5**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
			3/3	12.5		Medium sand, well sorted, slightly moist, very strong odor, black staining, greenish gray (GLEY2 5/2) mottled with strong brown soil and black streaks in impacted soil
				2957		Medium sand, well sorted, slightly moist, very strong odor, black staining on surface of soil, greenish gray (GLEY2 5/2)
				3508		
						Fine sand with some silt, with chunks of 1" diameter rock, dry to slightly moist, very strong odor, dark brown
				2907		Medium sand, well sorted, slightly moist, very strong odor, black staining on surface of soil, greenish gray (GLEY2 5/2)
				115.5		
25	-25	AS-5-25.0	3/3	1164		
				1209		
		AS-5-27.0		72.4		At 26.5 ft bgs, free water for about 5" then grades back to slightly moist
				34.2		
				3281.5		At 28.5 ft bgs, medium sand, very well sorted, free water until 31' then grades back to moist,
			1/3			
30	-30					
				192.7		
				222.4		At 31.5 ft bgs, free water until 32.5' then grades to moist, color begins to become mottled: strong brown with some dark gray/black greens, with little to no bluish/greenish gray
			3/3			
				8.9		
		AS-5-34.0		18.6		Clayey silt with fine sand, slightly moist, medium plasticity, medium stiffness, no odor, brown (10YR5/3) some black streaking on surface but not interior
35	-35					



Well/Boring Construction

ARCADIS
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 09/30/2014-10/02/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 36 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: **AS-6**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
						Asphalt
						Fill material, coarse sand size with chunks of concrete (1" in diameter), dry, 7.5YR7/6
				0.0		Fine sand with silt, loose, dry, mottled dark brown with light brown (10YR5/6, 10YR3/1) Pulled glass bottle out of fill
			Air knife			Layer of red brick 4 " thick in fill at 4 ft bgs.
5	-5	AS-6-5.0		0.0		Fine sand with silt, loose, moist, slight mottled dark brown with light brown (10YR5/6, 10YR3/1), no debris.
				0.5		Fine to medium sand with silt, very loose, no odor, mottled orange and gray colors (7.5YR5/8 and 10YR4/2)
10	-10	AS-6-10.0	4/4	0.7		
				0.8		Some black streaking, no odor
			4/4	1.1		Medium sand with little fines, very well sorted, moist, no odor, no mottling, dark grayish brown
15	-15	AS-6-15.0		1.5		
				0.6		Fine to medium sand with silt, very loose, no odor, mottled orange and gray colors (7.5YR5/8 and 10YR4/2)
			3/3	1.4		Medium sand with small pieces (2cm) of asphalt looking material, slight odor, strong brown with black
						Medium to fine sand, very well sorted, moist, slight odor, no mottling, dark greenish gray (GLEY1 4/2)

Well/Boring Construction: Grout; Sch 80 PVC riser

ARCADIS
Infrastructure, environment, facilities

Remarks: Due to slough falling down into hole, boring logs may not accurately represent the formation materials at the depths indicated. The shoe at 34' indicated we had a clayey silt, but the rest of the liner was the same sand as above.

Project Number: B0047339
Data File:
Template:
Date: 12/12/2014
Created by: Emily Kuhr

Date Start/Finish: 09/30/2014-10/02/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 36 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

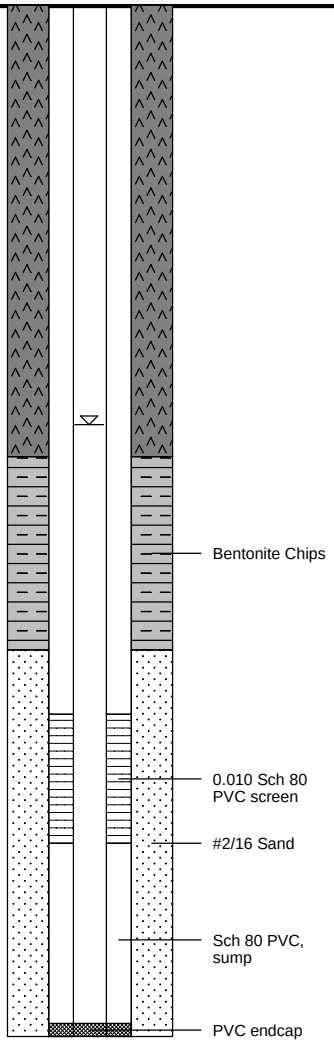
Well/Boring ID: **AS-6**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Stratigraphic Description
				9.2	Fine to medium sand with some silt, very well sorted, moist, no odor, mottled strong brown and gray
20	-20	AS-6-20.0	3/3		Medium sand, very well sorted, loose, moist, strong hydrocarbon like odor, no mottling, very dark greenish gray
				8.8	
		AS-6-22.0		314	At 22 ft bgs becomes very moist.
			3/3		At 23 ft bgs becomes wet.
				500	
				1893	At 24 ft bgs becomes moist again
25	-25	AS-6-25.0		520.7	
			3/3		At 25.5 ft bgs free water encountered
				1184	At 27 ft bgs becomes moist again
				136.1	At 28 ft bgs free water encountered, mostly in the liners; little recovery in this area
			1/2		
30	-30			59.4	
			2/2	3.2	At 31 ft bgs becomes very moist. Sand is very dense (inferred due to difficulty to proceed with direct push, can only collect 2-3 ft. in liners)
				44.9	Medium sand, moist, less odor, mottled greenish gray and strong brown color, mostly greenish gray
			2/2		
				68.6	At 33 ft bgs, becomes softer (easier to push through)
				2.4	Clayey silt with little fine sand, no odor, gray (5YR 5/7); from the shoe of the liner.
35	-35		2/2		
		AS-6-36.0		1.9	At 36 ft bgs (from the shoe) silty clay with some fine sand, no odor, dry, low to no plasticity, stiff, gray (5Y5/2)

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: Due to slough falling down into hole, boring logs may not accurately represent the formation materials at the depths indicated. The shoe at 34' indicated we had a clayey silt, but the rest of the liner was the same sand as above.

Date Start/Finish: 10/08/2014-10/09/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: **AS-7**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Stratigraphic Description
0	0				Asphalt
					Fine sand with some silt, no odor, dark yellowish brown color (10YR4/6)
					Asphalt
					No recovery from 0.5" to 5'
			Air knife		
5	-5	AS-7-5.0		0.0	Fine sand with silt, moist, gray (7.5YR0/1) strong brown mottling
					Fine sand with silt, moist, strong brown
				0.7	Fine sand with little silt, moist, no odor, mottled color, strong brown (7.5YR 5/8) and light olive gray (5YR 5/2)
			3/3	0.7	
10	-10	AS-7-10.0		0.4	
				0.3	
				0.5	
			4/4	0.7	Fine sand with little silt, moist, no odor, light olive gray (5YR 5/2) with some strong brown (7.5YR 5/8) mottling
				0.8	
15	-15	AS-7-15.0		0.5	Fine sand with more silt (slightly plastic), moist, no odor, light olive gray (5YR 5/2) with some strong brown (7.5YR 5/8) mottling
			2/2	2.6	About 2" of asphalt w/ styrofoam
					Fine sand with little silt, moist, odor, dark greenish gray (GLEY1 4/2)

Well/Boring Construction

Grout

2', Sch 80 PVC riser

ARCADIS
Infrastructure, environment, facilities

Remarks: By about 30' mostly slough in the sample lines so it becomes difficult to differentiate native soil from slough.

Date Start/Finish: 10/08/2014-10/09/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

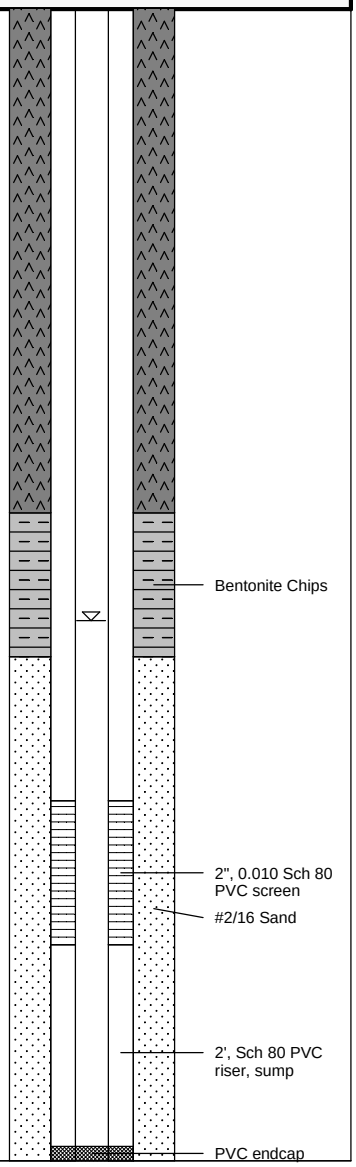
Well/Boring ID: **AS-7**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH / ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		2/2	5.4		
			12.9		
			11.1		Fine sand with little silt, moist, odor, greenish gray (GLEY1 5/1)
20 -20		3/3	4.2		
	AS-7-21.0		175.4		Fine sand with little silt, very moist, strong odor, dark greenish gray (GLEY1 4/2)
			85.4		Fine sand with little silt, very moist, strong odor, dark greenish gray (GLEY1 4/2) mottled with strong brown soil (7.5YR)
		3/3	25.1		Fine sand with little silt, very moist, odor, greenish gray (GLEY1 5/1)
			72.0		Fine sand with little silt, very moist, odor, dark greenish gray (GLEY1 4/2)
25 -25			7.1		At 25 to 26 ft bgs, free water encountered in liners
		2/2	71.9		At 26 ft bgs, dries to moist soil
	AS-7-27.0		1.7		
		1/3			
30 -30			4.6		Fine sand with little silt, moist, little to no odor, staining goes away, olive color (5YR 5/3)
		2/2			
	AS-7-32.0		5.1		

Well/Boring Construction



Remarks: By about 30' mostly slough in the sample lines so it becomes difficult to differentiate native soil from slough.

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: 10/08/2014 & 10/09/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: AS-8

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Stratigraphic Description
0	0				Asphalt
				0.6	Fine sand with some silt, dry to moist, no odor, dark yellowish brown color (10YR4/6)
					Asphalt
					No recovery
			Air knife		
5	-5	AS-8-5.0		0.0	Very fine to fine sand with silt, low plasticity, no odor, strong brown fine sand (7.5YR5/8), sand with silt (gray 7.5YR6/1)
					Fine to medium sand with silt, low plasticity, no odor, color mottling continues
				0.3	
			3/3		Fine sand with little silt, moist, no odor, yellowish brown (10YR5/6)
				0.1	Fine sand with little silt, moist, no odor, color begins to mottle: yellowish brown (10YR5/6) and olive gray (5YR5/2)
10	-10	AS-8-10.0			
				0.2	
				1.5	
			4/4		
				0.2	
				0.2	Fine sand, some medium sand, moist, no odor, olive gray (5YR5/2)
					Fine sand with little silt and trace clay, no odor, olive brown (7.5YR4/4)
15	-15	AS-8-15.0		0.4	
			2/2		Fine sand with no clay, slightly moist, no odor, olive (5YR4/3)
				0.3	

Well/Boring Construction: Grout; 2", Sch 80 PVC riser

ARCADIS
Infrastructure, environment, facilities

Remarks: Abundant slough in borehole, which resulted in at least half of the sample in the liner being slough at the top (usually very wet/saturated) then native soil near the base of the liner.

Date Start/Finish: 10/08/2014 & 10/09/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

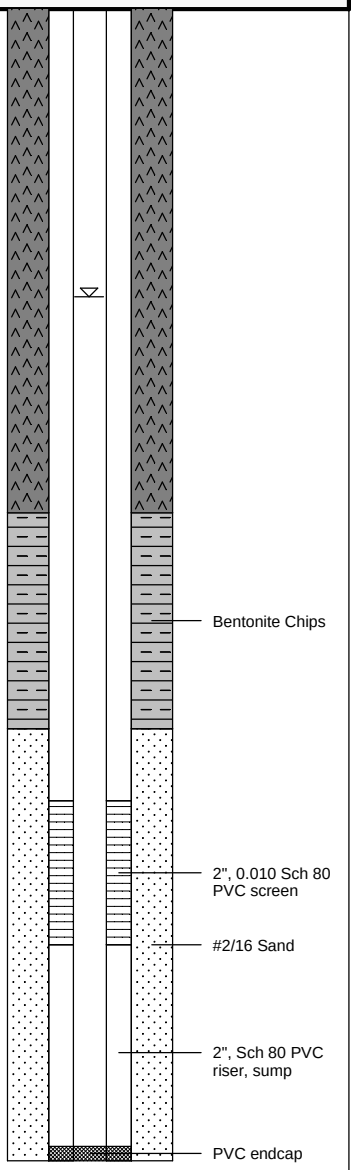
Well/Boring ID: **AS-8**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
			2/2	0.5 0.9		Fine sand with no clay, slightly moist, odor, olive (5YR4/3) with greenish gray staining (GLEY1 5/1)
			3/3	0.5 0.6		
20	-20	AS-8-20.0		30.2		Fine sand with no clay, very moist, odor, staining, dark greenish gray (GLEY1 4/1)
			2/2	7.0 16.9		
			2/2	43.0		Fine sand with no clay, very moist, odor, staining, greenish gray (GLEY1 5/1) At 24 ft bgs wet soil
25	-25		2/2	33.6		Fine sand with no clay, very moist, odor, staining, dark greenish gray (GLEY1 4/1)
		AS-8-26.0	2/2	19.5 2.4		Soil grades to moist by 26 ft bgs.
			1/1	0.7		Fine sand with no clay, very moist, odor, staining, greenish gray (GLEY1 5/1)
			1/1	18.0		Fine sand with no clay, moist, odor, no staining, stained sand begins mixing with olive gray sand (5YR4/5). By 29 ft bgs, no stained soils.
30	-30	AS-8-30.0	2/2	0.4		
				0.6		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: Abundant slough in borehole, which resulted in at least half of the sample in the liner being slough at the top (usually very wet/saturated) then native soil near the base of the liner.

Date Start/Finish: 10/08/2014 & 10/13/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Rob Moniz

Well/Boring ID: **AS-9**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	0					Asphalt
						Fine sand with some silt, moist, no odor, mottling, mostly brown (10YR4/3) with some strong brown (7.5YR5/8)
			Air knife			
5	-5	AS-9-5.5		0.1		
				0		Occasional chunks and laminations of asphalt, trace plastic
			2/2	0		
10	-10	AS-9-10.0		0		
				1.0		Encountered ~2" of asphalt
						Fine sand with trace fines, faint weathered hydrocarbon like odor, trace fines, olive brown
			2/5			No Recovery
15	-15			1.0		Fine sand with some silt, moist.
				47		Fine sand with trace fines, strong odor, GLEY1 4/1
				1450		
			3.5/5			

Well/Boring Construction: Cold Patch; Native Sand; Grout; 2", Sch 80 PVC riser

Remarks:

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: 10/08/2014 & 10/13/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Rob Moniz

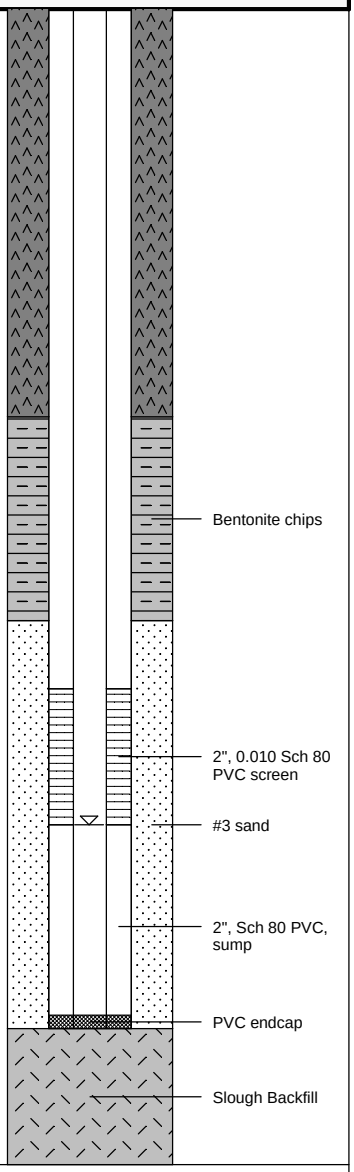
Well/Boring ID: **AS-9**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
				2670		
				2020		No Recovery
20	-20	AS-9-20.0	5/5	2100		Fine sand with trace fines, strong odor, GLEY1 4/1
				1450		
				895		
				790		
				611		No clay, trace silt, olive brown
25	-25	AS-9-25.0		90		Moist/wet, loose
				31		
			5/5	14		
				9		
				7		
30	-30	AS-9-30.0		8		Wet at 30 ft bgs
				31		
				14		
			5/5	9		Clayey fine sand, little silt, dense, moist, low plasticity, yellowish brown
		AS-9-33.5		2		Fine sandy clay, hard, moist, medium plasticity
35	-35			3		Clayey fine sand, little silt, dense, moist, low plasticity, yellowish brown

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 10/08/2014-10/10/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs.
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: **AS-10**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0					Asphalt	
						Fine sand with little silt, brown (10YR4/3)	
			Air knife				
5	-5	AS-10-5.0		0.0		Fine sand with little silt, dark yellowish brown (10YR5/6)	
						Fine sand with little silt, yellowish brown (10YR5/8) mottled with strong brown (7.5YR5/8)	
			0/2			No Recovery	
10	-10	AS-10-10.0				Fine sand with little silt, moist, no odor, yellowish brown (10YR5/6)	
				33.4			
				0.9		Fine sand with little silt, moist, slight odor, yellowish brown (10YR5/6) mottled with gray (10YR5/1)	Grout
			4/5	1.5			
				1.3		Fine sand with more silt, moist, slight odor, yellowish brown (10YR5/6) mottled with gray (10YR5/1)	2", Sch 80 PVC riser
15	-15	AS-10-15.0		4.2		Fine sand with more silt, moist, slight odor, mostly gray (10YR5/1) mottled with yellowish brown (10YR5/6)	
				5.1			
				25.7		Fine sand with more silt, moist, slight odor, dark greenish gray (GLEY1 4/1)	
				2.7			
			4/5				

Remarks:

ARCADIS
Infrastructure, environment, facilities

Project Number: B0047339
Data File:
Template:
Date: 12/15/2014
Created by: Emily Kuhr

Date Start/Finish: 10/08/2014-10/10/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs.
Surface Elevation: NA

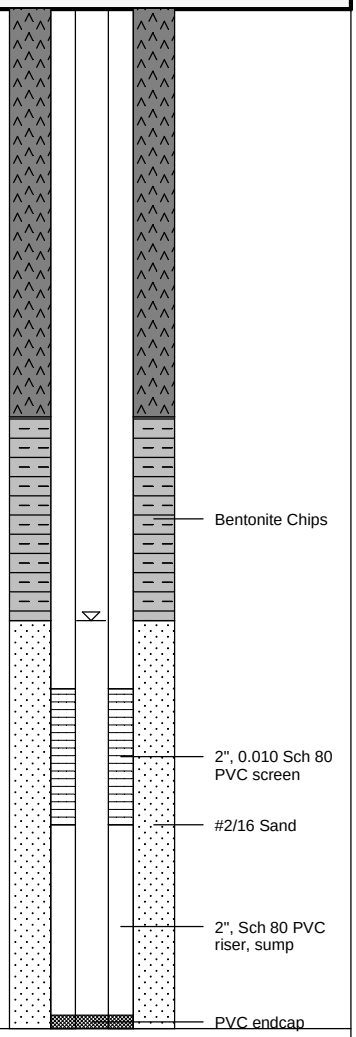
Descriptions By: Adam Kinnard

Well/Boring ID: **AS-10**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
				68.3		
				31.3		Fine sand with trace silt, moist, odor, dark greenish gray
20	-20	AS-10-20.0		617.0		
				1880		Fine sand with trace silt, moist, odor, very dark greenish gray (GLEY1 3/1)
			5/5	1800		Fine sand with trace silt, moist, odor, dark greenish gray (GLEY 1 5/1)
				1918		
				100.7		Fine sand with trace silt, moist, odor, very dark greenish gray (GLEY1 3/1)
25	-25			21.5		
			2.5/2.5	10.4		Fine sand with trace silt, very moist, odor, dark greenish gray (GLEY1 3/1)
		AS-10-26.5		7.4		
				5.9		Fine sand with trace silt, very moist, little/no odor, olive gray (5YR4/2)
						Fine sand with trace silt, free water in liner, strong odor, dark olive gray
			2.5/2.5	9.8		Fine sand with trace silt, free water in liner, little/no odor, brown (10YR4/3)
30	-30	AS-10-30.0		19.2		Fine sand with trace silt (most likely all slough), very moist, little/no odor, brown (10YR4/3)
			0/3			



ARCADIS
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 10/01/2014 & 10/08/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 34 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

Well/Boring ID: **AS-10**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0					Asphalt	
						Fill material, coarse sand size with chunks of concrete (up to 2" in diameter), dry, 7.5YR7/6	
						Encountered black tarp material	
						Fine sand with little silt, well sorted, slightly moist, no odor, strong brown (7.5YR 4/6)	
			Air knife				
5	-5	AS-11-5.0		0.0		Fine to medium sand with some silt, well sorted, moist, no odor, slightly mottled color: strong brown (7.5YR5/8) with some gray and orange veins	
10	-10	AS-11-10.0	4/4				
				33.4		Color grades to light olive brown (7.5YR 5/6)	
				0.9			Grout
				1.5			
			4/4	1.3		Medium sand with some silt, well sorted, moist, no odor, color begins to mottle: strong brown and grayish brown (2.5YR4/2)	2", Sch 80 PVC riser
15	-15	AS-11-15.0		4.2			
				5.1			
				25.7		Fine to medium sand with some silt, well sorted, moist, no odor, slightly mottled color: strong brown (7.5YR5/8) with some gray and orange veins and some slight blue/gray streaks	
				2.7			
		AS-11-17.5	3/3			Medium sand with some fine sand and little silt, well sorted, moist, odor, dark greenish gray	

Remarks: At 26' the hole collapsed, had to drill through some slough in order to collect 26'-28'.

ARCADIS
Infrastructure, environment, facilities

Project Number: B0047339
Data File:
Template:
Date: 12/15/2014
Created by: Emily Kuhr

Date Start/Finish: 10/01/2014 & 10/08/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 34 ft bgs
Surface Elevation: NA

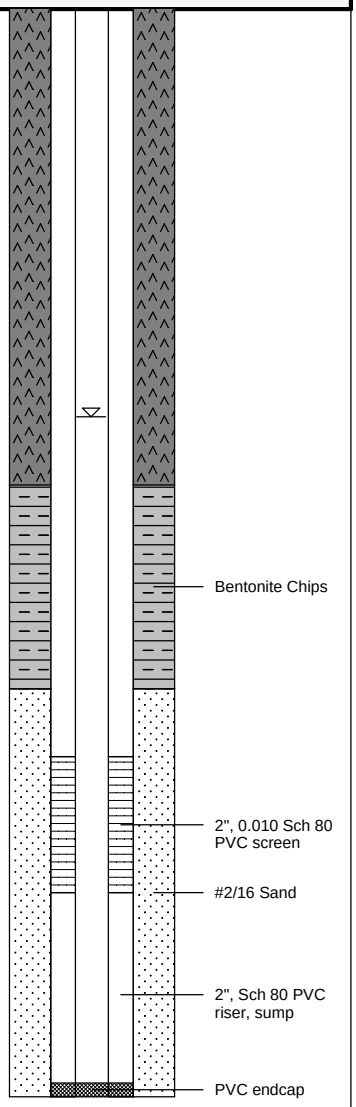
Descriptions By: Adam Kinnard

Well/Boring ID: **AS-10**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
				68.3		(GLEY1 4/1)
				31.3		No recovery
20	-20		0	617.0		
				1880		
				1800		
				1918		Medium sand with some fine sand and no silt, very well sorted, moist, strong odor, greenish gray (GLEY1 5/1)
			2.5/3	100.7		Becomes wet at 24 ft bgs
25	-25			21.5		
						Grades to moist at 25.5 ft bgs
		AS-11-26.0		10.4		Free water in sleeve at 26 ft bgs
			2/2	7.4		
				5.9		
						Grades to moist at 27.5 ft bgs
						Wet from 28 to 29.5 ft bgs.
			2/2	9.8		
						Moist from 29.5 to 30 ft bgs.
30	-30	AS-11-30.0		19.2		
35	-35					



Well/Boring Construction

ARCADIS
Infrastructure, environment, facilities

Remarks: At 26' the hole collapsed, had to drill through some slough in order to collect 26'-28'.

Date Start/Finish: 10/08/2014 & 10/10/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

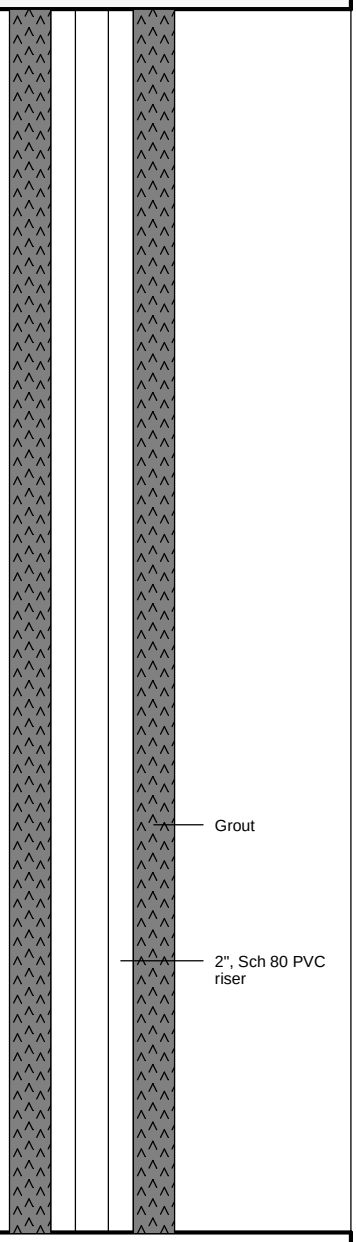
Well/Boring ID: **AS-12**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
						Asphalt
						Fill material of fine sand with little silt, brown (10YR4/3)
						Fine sand with little silt, moist, brown (10YR4/3) Small layer of asphalt encountered
			Air knife			
5	-5	AS-10-5.0		0.0		
						Fine sand with clay and trace silt, lenses of clayey material within sand, moist, no odor
			3/3			Fine sand with little silt, moist, no odor, dark yellowish brown with slight gray mottling
10	-10	AS-10-10.0		33.4		
				0.9		
			4/4	1.5		
				1.3		Fine sand with little silt, moist, odor, yellowish brown with trace mottling of greenish gray and red (2.5YR)
15	-15	AS-10-15.0		4.2		Fine sand with little silt, moist, odor, greenish gray
			2/2	5.1 25.7		
						Fine sand with little silt, moist, odor, olive gray with slight greenish gray hue At 17 ft bgs, about 2" of yellowish brown soil with no staining
				2.7		
			2/2			

Well/Boring Construction



Remarks:

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: 10/08/2014 & 10/10/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 33 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

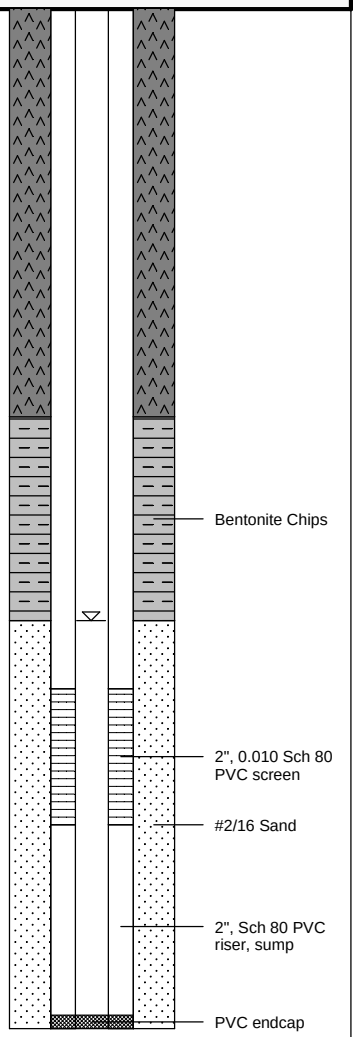
Well/Boring ID: **AS-12**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
				68.3		
				31.3		
20	-20	AS-10-20.0	3/3	617.0		Fine to medium sand with little silt, very moist/wet, odor
				1880		
			2/2	1800		
				1918		
				100.7		
25	-25		2/2	21.5		
				10.4		
		AS-10-26.5	2/2	7.4		
				5.9		
			1/1	9.8		Fine to medium sand with little silt, very moist, very slight odor, grades to an olive gray
			1/1			Fine to medium sand with no silt, wet, very slight odor, dark yellowish brown with some olive gray (interval could be slough).
30	-30	AS-10-30.0		19.2		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 09/30/14 - 10/02/14
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 15 ft bgs
Surface Elevation: NA

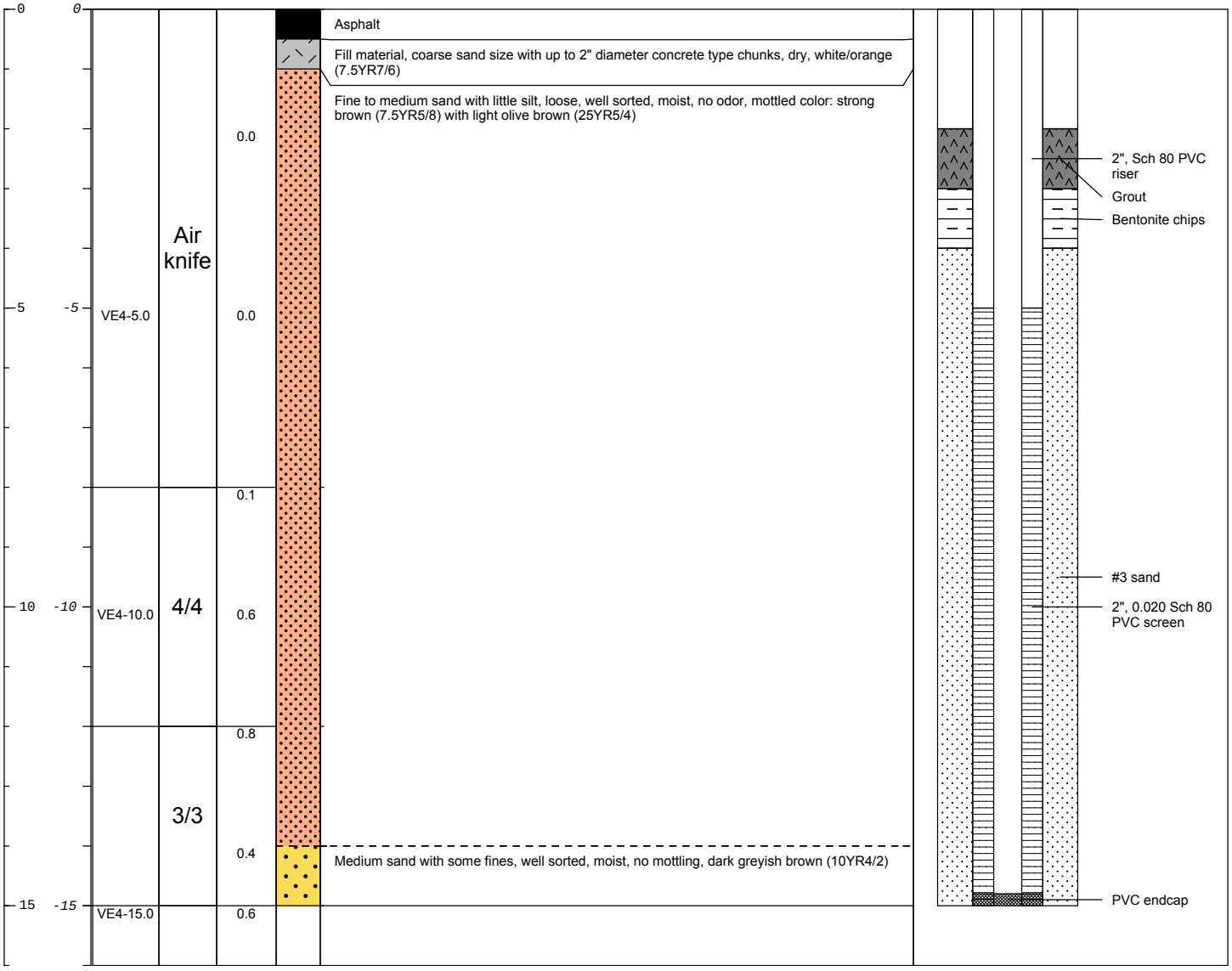
Descriptions By: Adam Kinnard

Well/Boring ID: VE-4

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction



Remarks:

ARCADIS
Infrastructure, environment, facilities

Project Number: B0047339
Data File:
Template:
Date: 12/31/2015 Emily Kuhr

Date Start/Finish: 10/02/2014 & 10/09/2014
Drilling Company: Gregg Drilling
Driller's Name: Brandon Moses
Drilling Method: Hollow Stem Auger
Auger Size: 8.5"
Rig Type: Marl DP 2.5
Sampling Method: Continuous core

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 15 ft bgs
Surface Elevation: NA

Descriptions By: Adam Kinnard

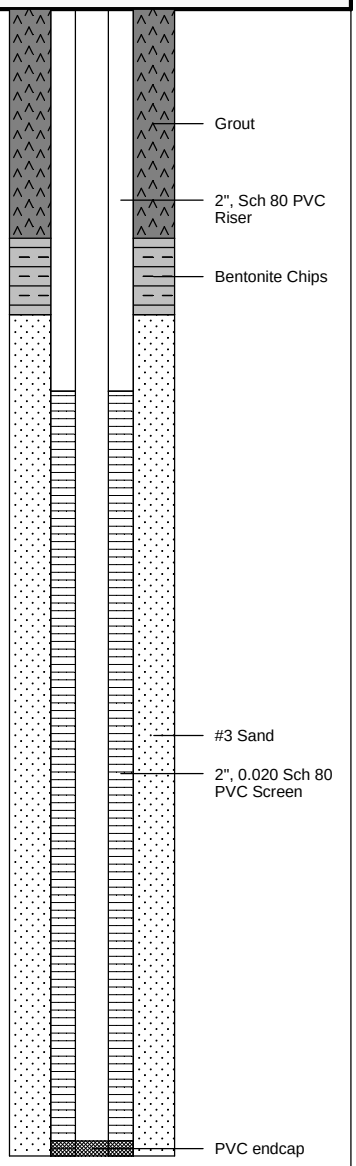
Well/Boring ID: VE-5

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
			Hand Auger to 8'	0		Asphalt
				0		Fine sand, well sorted, dry to slightly moist, no odor, dark brown (7.5YR3/3)
				0		
				0		
5	-5	VE5-5.0		0		Silty sand, very fine to fine sand, slightly plastic, no odor, strong brown (7.5YR5/8)
				0		
				0		
				1.0		Sand with little silt, moist, no odor, mottled color:strong brown and olive (5YR5/4)
10	-10	VE5-10.0		0.6		
				0.6		Sand with little silt, moist, no odor, gray (5YR5/2)
				0.3		Sand with little silt, moist, no odor, strong brown with gray mottling
				1.2		
				1.1		
15	-15	VE5-15.0				

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks:

Project Number: B0047339
Data File:
Template:
Date: 12/15/2014
Created by: Emily Kuhr

Date Start/Finish: 12/8-12/9/2015
Drilling Company: Cascade Drilling
Driller's Name: Joseph Koons
Drilling Method: Hollow Stem Auger
Auger Size: 8"
Rig Type: CME 75
Sampling Method: Split Spoon (18")

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 38.5 feet
Surface Elevation: NA

Descriptions By: Carl Edwards

Well/Boring ID: **AS-13**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

Reviewed By: Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0						3" of asphalt	
				0.0			21" of controlled density fill.	
				0.0	SP		SAND, dark yelowish brown (10YR 4/6), fine to medium sand, poorly graded, very loose, damp.	
			Air knife					
5	-5	AS-13 -5.0		0.0				
				0.0	SP		SAND, dark yellowish brown (10YR 4/6), fine to medium sand, trace coarse sand, trace silt, poorly graded, very loose, moist.	
							No recovery.	
			3/3	0.0	SP		SAND, dark yellowish brown (10YR 4/6), fine to medium sand, poorly graded, very loose, moist.	
10	-10	AS-13 -10.0	3/3	0.1	SP		SAND, dark yellowish brown (10YR 4/6), fine to medium sand, poorly graded, very loose, oxidation.	Neat Cement Grout from 1 to 29.5' bgs.
			3/3		SP		SAND with Silt, dark yellowish brown (10YR 4/4), fine to medium sand, poorly graded, very loose, moist, oxidation.	
			3/3	0.0				
				0.0				
							No recovery.	
15	-15	AS-13 -15.0	2/3	0.3	SP		SAND, dark grayish brown (10YR 4/2), fine to medium sand, trace coarse sand, poorly graded, very loose, moist.	2" Sch 80 PVC riser from 0.5 to 33.5' bgs.
			3/3		SP		SAND, dark olive gray (5Y 3/2), fine to medium sand, trace coarse sand, poorly graded, very loose, moist, odor.	
		AS-13 -17.0		533.6				
			3/3	430.5	SP		SAND, black, (5Y 2.5/1), fine to medium sand, poorly graded, very loose, moist, odor.	
							No recovery.	
20	-20	AS-13 -20.0	2/3	398.7	SP		SAND, dark gray (5Y 4/1), fine to medium sand, trace coarse sand, poorly graded, very loose, moist.	

ARCADIS Design & Consultancy for natural and built assets

Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

Project Number: B0047339
Data File:
Template:
Date: 12/15/2015
Created by: Carl Edwards

Date Start/Finish: 12/8-12/9/2015
Drilling Company: Cascade Drilling
Driller's Name: Joseph Koons
Drilling Method: Hollow Stem Auger
Auger Size: 8"
Rig Type: CME 75
Sampling Method: Split Spoon (18")

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 38.5 feet
Surface Elevation: NA

Descriptions By: Carl Edwards

Well/Boring ID: **AS-13**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

Reviewed By: Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
			3/3	3.5	SP		As above, color change to black (5Y 2.5/1) at 22' bgs, wet.	
			3/3	3.4				
			3/3	8.6	SP		SAND, dark yellowish brown (10YR 4/6), fine to medium sand, trace silt, very loose, moist.	
25	-25	AS-13 -25	3/3	0.6	SP		SAND, dark olive gray, (5Y 3/2), fine to medium sand, trace coarse sand, poorly graded, very loose, moist.	
							Color change to olive brown (2.5Y 4/4) at 25.5' bgs.	
			1/3				No recovery.	
			3/3	0.5	SP		SAND, olive (5Y 4/3), fine to medium sand, trace silt, very loose, moist.	
30	-30	AS-13 -30.0	3/3	1.0	SP		SAND, dark yellowish brown (10YR 4/4), fine to medium sand, trace coarse sand, poorly graded, very loose, moist. Color change to dark grayish brown (2.5Y 4/2) at 29.5' bgs.	Hydrated bentonite chips from 29.5 to 32.5' bgs
			3/3	0.4				
			3/3	0.3				
			3/3	0.2				
35	-35	AS-13 -35.0	3/3	0.2	SP		CLAYEY SAND with Silt, pale olive (5Y 6/3), fine sand, loose, poorly graded.	2" 0.010 Sch 80 PVC screen from 33.5 to 35.5' bgs
		AS-13 -35.5					Bottom of boring at 38.5' bgs. Sample soil continously to 35.5' bgs and overdrill to 38.5' to set 3' sump.	#2/12 Sand from 32.5 to 38.5' bgs 2" Sch 80 PVC sump from 35.5 to 38.5' bgs PVC endcap

ARCADIS Design & Consultancy for natural and built assets

Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

Date Start/Finish: 12/7-12/8/2015
Drilling Company: Cascade Drilling
Driller's Name: Joseph Koons
Drilling Method: Hollow Stem Auger
Auger Size: 8"
Rig Type: CME 75
Sampling Method: Split Spoon (18")

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 40.5 feet
Surface Elevation: NA

Descriptions By: Carl Edwards

Well/Boring ID: **AS-14**

Client: Chevron Environmental Management Company

Location: 706 Harrison Street

Reviewed By: Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0						3" of asphalt	
							21" of controlled density fill.	
				0.0	SP		SAND, brown (10YR 4/3), fine to medium sand, poorly graded, very loose, damp.	
		Air knife		0.0				
5	-5	AS-14 -5.0			SM		SILTY SAND, brown (10YR 4/3), fine to medium sand, trace clay, loose, moist, oxidation.	
				0.0	SP		SAND, brown, (10YR 4/3), fine to medium sand, trace silt, poorly graded, moist, very loose.	
			3/3					
10	-10	AS-14 -10.0		0.0				Neat Cement Grout from 1 to 31.5' bgs.
			3/3					
				0.0	SP		SAND, grayish brown (10YR 5/2), fine to medium sand, trace silt, poorly graded, moist, very loose.	
			3/3					
				1.0				
15	-15	AS-14 -15.0	3/3	0.6			SAND, olive (5Y 4/3), fine to medium sand, poorly graded, very loose, moist, odor.	2" Sch 80 PVC riser from 0.5 to 35.5' bgs.
			3/3	42.3	SP		1" silty sand lense at 16' bgs	
							No recovery	
			2/3	558.9	SP		Color change to dark greenish gray (Gley1 4/10Y).	
			3/3	359.7			Color change to dark yellowish bronw (10YR 4/6) from 19' to 19'3" bgs Color change to dark greenish gray (Gley1 4/10Y) at 19'3" bgs	
20	-20	AS-14 -20.0		50.7			No recovery.	

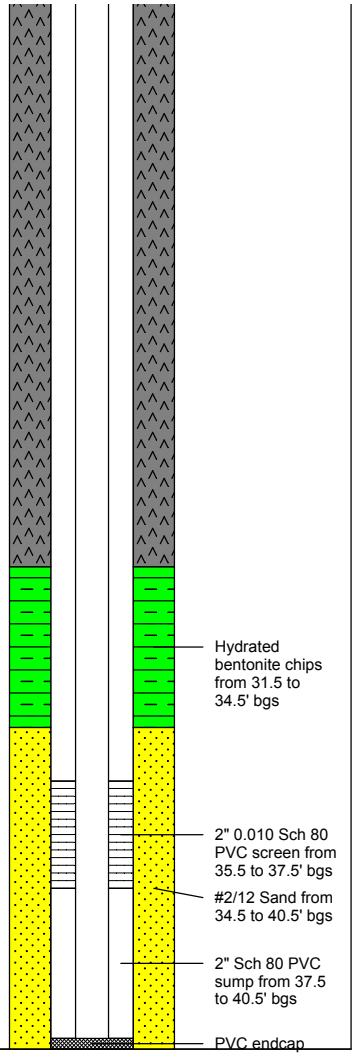
Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

ARCADIS Design & Consultancy for natural and built assets

Project Number: B0047339
Data File:
Template:
Date: 12/15/2015
Created by: Carl Edwards

Date Start/Finish: 12/7-12/8/2015 **Drilling Company:** Cascade Drilling **Driller's Name:** Joseph Koons **Drilling Method:** Hollow Stem Auger **Auger Size:** 8" **Rig Type:** CME 75 **Sampling Method:** Split Spoon (18")	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 40.5 feet **Surface Elevation:** NA **Descriptions By:** Carl Edwards	**Well/Boring ID: AS-14** **Client:** Chevron Environmental Management Company **Location:** 706 Harrison Street **Reviewed By:** Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
			2/3	86.5	SP		SAND, very dark greenish gray (Gley1 3/5GY), fine to medium sand, poorly graded, very loose, wet.	
							No recovery.	
			2/3	9.8	SP		SAND, dark greenish gray (GLEY1 4/10Y), fine to medium sand, trace coarse sand, poorly graded, very loose, wet.	
							No recovery.	
			2/3	1.4	SP		As above.	
25	-25	AS-14 -25					No recovery.	
			2/3	4.4	SP		As above.	
							No recovery.	
			2/3	0.1	SP		Color change to dark olive gray (5Y 3/2).	
							No recovery.	
			3/4	1.8	SP		SAND, olive brown (2.5Y 4/3), fine to medium sand, trace coarse sand, poorly graded, very loose, wet.	
				2.4				
30	-30	AS-14 -30.0	3/3					
				18.4				
			3/3					
				2.0				
			3/3					
				1.5				
				5.6				
35	-35	AS-14 -35.0	3/3				SAND, olive gray (5Y 4/2), fine to medium sand, trace coarse sand, poorly graded, very loose, wet.	
				13.3				
			3/3	4.1				
			3/3	8.4	SM		SILTY SAND with Clay, loight yellowish brown (2.5Y 6/3), fine to medium sand, very loose, wet.	
				1.3	CL		SANDY CLAY with Silt, pale olive (5Y 6/3), fine sand, medium plasticity, soft, wet.	
40	-40						Bottom of boring at 40.5' bgs. Sample soil continously to 39' bgs and overdrill to 40.5' to set 3' sump.	



ARCADIS Design & Consultancy for natural and built assets

Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

Date Start/Finish: 12/09/2015
Drilling Company: Cascade Drilling
Driller's Name: Joseph Koons
Drilling Method: Hand Auger
Auger Size: 2"
Rig Type: NA
Sampling Method: Continuous using hand auger

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 5 feet
Surface Elevation: NA

Descriptions By: Sean Maurel

Well/Boring ID: **SV-1**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

Reviewed By: Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0	SV-1 -2.0	Hand Auger	0.1	SP		4" of asphalt 4" of gravel fill material SAND, dark brown (7.5YR 3/2), fine to medium sand, trace silt, poorly graded, very loose, damp. Color change to dark brown (7.5YR 3/3) at 1.5' bgs. Color change to dark yellowish brown (10YR 3/6) at 3' bgs.	4" Flush mount well box Dry benotnite granules from 0.5 to 3' bgs 1/4" Teflon tubing Hydrated bentonite granules from 3 to 4' bgs
				0.1				
5	5	SV-1 -5.0		0.1	SP		SAND, dark yellowish brown (10YR 3/6), fine to medium sand, trace coarse, trace silt , poorly graded, very loose, damp. Color change to dark yellowish brown (10YR 4/6) at 4' bgs. Bottom of boring at 5' bgs.	#2/12 Sand from 4 to 5' bgs 1" screen

Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

ARCADIS Design & Consultancy for natural and built assets

Project Number: B0047339
Data File:
Template:
Date: 12/17/2015
Created by: Sean Maurel

Date Start/Finish: 12/09/2015
Drilling Company: Cascade Drilling
Driller's Name: Joseph Koons
Drilling Method: Hand Auger
Auger Size: 2"
Rig Type: NA
Sampling Method: Continuous using hand auger

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 5 feet
Surface Elevation: NA

Descriptions By: Carl Edwards

Well/Boring ID: **SV-2**

Client: Chevron Environmental Management Company

Location: 726 Harrison Street

Reviewed By: Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0	SV-2 -2.0	Hand Auger	0.1	SP		4" of asphalt	4" Flush mount well box
							4" of gravel fill material	
				0.1			SAND with Silt, very dark grayish brown (10YR 3/2), fine sand, trace silt, poorly graded, very loose, damp, brick fragments.	Dry benotnite granules from 0.5 to 3' bgs
				0.1			As above; no brick fragments, color change to dark brown (10YR 3/3) at 3' bgs.	1/4" Teflon tubing
				0.1				Hydrated bentonite granules from 3 to 4' bgs
5	5	SV-2 -5.0		0.1	SP		SAND, dark yellowish brown (10YR 4/6), fine sand, trace silt , poorly graded, very loose, damp.	#2/12 Sand from 4 to 5' bgs
				0.2			Bottom of boring at 5' bgs.	1" screen

Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

ARCADIS Design & Consultancy for natural and built assets

Project Number: B0047339
Data File:
Template:
Date: 12/17/2015
Created by: Sean Maurel

Date Start/Finish: 12/09/2015 **Drilling Company:** Cascade Drilling **Driller's Name:** Joseph Koons **Drilling Method:** Hand Auger **Auger Size:** 2" **Rig Type:** NA **Sampling Method:** Continuous using hand auger	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 5 feet **Surface Elevation:** NA **Descriptions By:** Carl Edwards	**Well/Boring ID:** **SV-3** **Client:** Chevron Environmental Management Company **Location:** 706 Harrison Street **Reviewed By:** Katherine Brandt

DEPTH	ELEVATION	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0	SV-3 -2.0	Hand Auger	0.1	SP		4" of asphalt	4" Flush mount well box
				0.0			4" of gravel fill material	
							SAND with Silt, dark brown (10YR 3/3), fine sand, poorly graded, very loose, damp.	Hydrated bentonite granules from 3 to 4' bgs
				0.1			Color change to dark yellowish brown (10YR 4/4) at 3' bgs.	1/4" Teflon tubing
				0.1				Dry benotnite granules from 0.5 to 3' bgs
5	5	SV-3 -5.0		0.1	SP		SAND, dark yellowish brown (10YR 4/6), fine sand, trace silt, poorly graded, very loose, damp.	#2/12 Sand from 4 to 5' bgs
							Bottom of boring at 5' bgs.	1" screen

ARCADIS Design & Consultancy for natural and built assets

Remarks: " = inches
' = feet
bgs = below ground surface
NA = not available/applicable

Project Number: B0047339
Data File:
Template:
Date: 12/15/2015
Created by: Carl Edwards

APPENDIX C

CDWR Well Completion Reports

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0293914

Page 1 of 1

Owner's Well Number AS-13

Date Work Began 12/07/2015 Date Work Ended 12/9/2015

Local Permit Agency Alameda County Public Works

Permit Number W2015-1029 Permit Date 11/19/15

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N Latitude W Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Hollow Stem Auger Drilling Fluid

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
		SEE ATTACHED GEOLOGIC LOG

Total Depth of Boring 38 Feet

Total Depth of Completed Well 38 Feet

Well Owner

Name Chevron Environmental Management Company (CEMC)

Mailing Address 6101 Bollinger Canyon Rd #5119

City San Ramon State CA Zip 94583

Well Location

Address 706 Harrison Street

City Oakland County Alameda

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

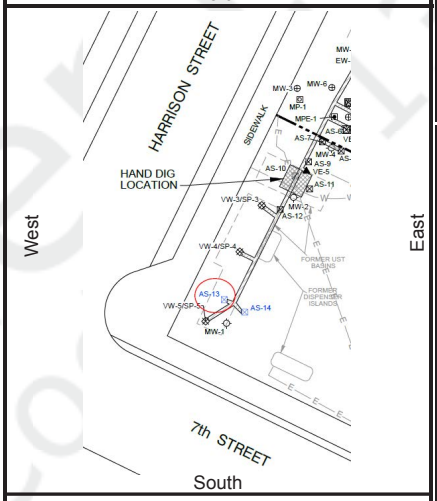
Datum Dec. Lat. Dec. Long.

APN Book 1 Page 185 Parcel 26

Township Range Section

Location Sketch

(Sketch must be drawn by hand after form is printed.)



Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
◉ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level (Feet) Date Measured

Estimated Yield * (GPM) Test Type

Test Length (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	33	8	Blank	PVC Sch. 80		2		
33	35	8	Screen	PVC Sch. 80		2	Milled Slots	0.010
35	38	8	Blank	PVC Sch. 80		2		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	29	Cement	Portland Type II-V
29	32	Bentonite	Cetco Med. Chips
32	38	Filter Pack	#2/12 Sand

Attachments

☑ Geologic Log
☑ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☐ Other

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name
Person, Firm or Corporation

Address City CA State Zip

Signed
C-57 Licensed Water Well Contractor

Date Signed C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ARCADIS

EXPLORATORY BORING LOG

project no:	B0047339.2015.00008	date: 12- 7 -15	boring number: AS-13
client:	Chevron - 351646		
location:	706/726 Harrison Street, Oakland, CA		
logged by:	CAE / SM		
driller/helper:	Cascade Drilling		page 1 of 2

field location of boring:

drilling method: HOLLOW STEM AUGER
hole diameter: 8"
casing diameter: 2"
well completion data:

ground elevation: datum:

water level / time / date

boring/well construction	headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	
				1			3" of concrete 21" of CDF ↓
	0.0			2			
	0.0			3		SP	Sand, dark yellowish brown (10YR 4/6), fine ~~sand~~ to medium sand, poorly graded, damp, very loose.
				4			
	0.0	AS-13-5 955		5			
				6			
	0.0			7		SP/SM	Sand, dark yellowish brown (10YR 4/6), fine to medium sand, trace coarse sand, trace silt, poorly graded, moist, very loose.
				8			
			14	9		SP	SAND, DARK YELLOWISH BROWN (10YR 4/6),
	0.0		26				FINE TO MEDIUM SAND, POORLY GRADED, VERY LOOSE
		AS-13-10 (1525)	35	10			NO RECOVERY (3")
			14				
	0.1		10	11		SP	SAND, DARK YELLOWISH BROWN (10YR 4/6), FINE TO
			10				MEDIUM SAND, POORLY GRADED, VERY LOOSE, MOTTLED
			10	12			OXIDATION
	0.0		11			SP	SAND W/ SILT, DARK YELLOWISH BROWN (10 YR 4/4)
			15	13			FINE TO MEDIUM SAND, POORLY GRADED, VERY LOOSE
			8				AS ABOVE; MOTTLED OXIDATION
	0.0		14	14			
			42				
		AS-13-15 (1545)	30	15		SP	SAND, DARK GRAYISH BROWN (10 YR 4/2), FINE TO
	0.3	(5")	50				MEDIUM, TRACE COARSE SAND, POORLY GRADED, MOIST, VERY LOOSE
				16			NO RECOVERY (7")
			15			SP	SAND, DARK OLIVE GRAY (5Y 3/2), FINE TO MEDIUM
		AS-13-17.5 (1600)	24	17			TRACE COARSE SAND, POORLY GRADED, MOIST, VERY LOOSE
	533.6		35				COLOR / ODOR
			30	18		SP	SAND, BLACK (5Y 2.5/1), FINE TO MEDIUM,
	430.5		40				POORLY GRADED, MOIST, VERY LOOSE
		(6")	50	19			COLOR / ODOR
						SP	NO RECOVERY (6")
	398.7	AS-13-20 (0730)	40	20			SAND, DARK GRAY (5Y 4/1), FINE TO MEDIUM

PORTLAND CEMENT TYPE II-V

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

ARCADIS

EXPLORATORY BORING LOG

project no:	B0047339.2015.00008	date: 12- 9 -15	boring number: AS-13
client:	Chevron - 351646		
location:	706/726 Harrison Street, Oakland, CA		
logged by:	SEAN MARKEL (SM)		page 1 of 1
driller/helper:	CASCADE DRILLING		

field location of boring:

drilling method: HOLLOW STEM AUGER
hole diameter: 8"
casing diameter: 2"
well completion data:

ground elevation: datum:

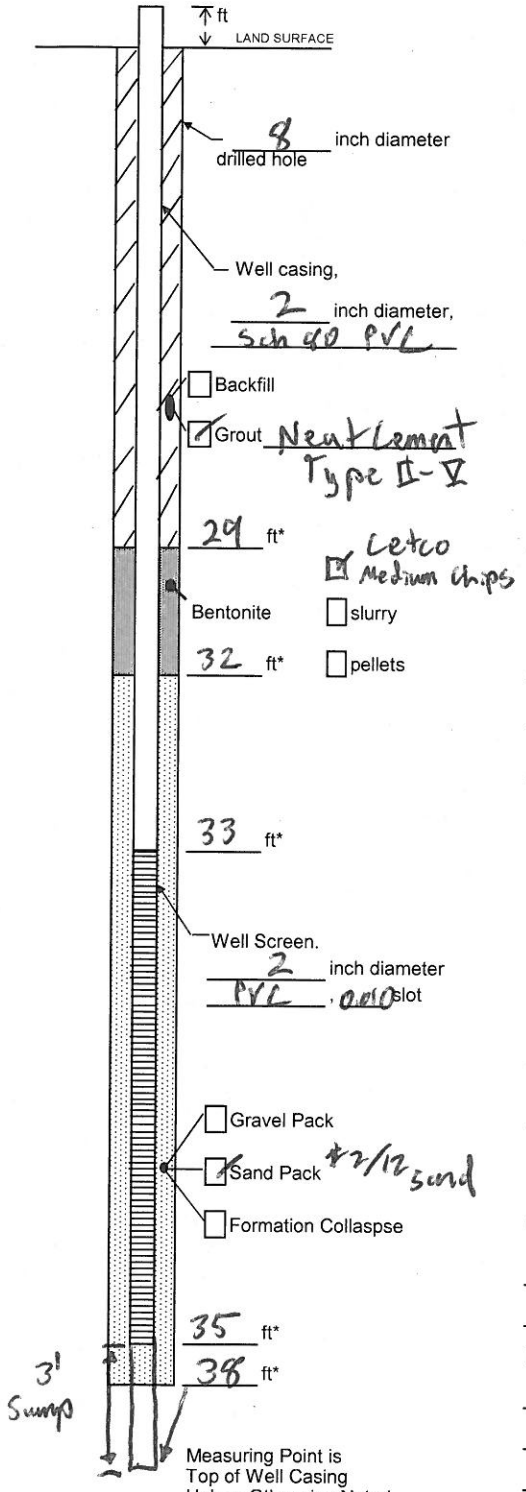
boring/well construction	headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level / time / date	
→ PORTLAND CEMENT TYPE II-V		(6")	50					TRACE COARSE SAND, POORLY GRADED, MOIST, VERY LOOSE
			6	21				
	3.5		27					AS ABOVE
			40	22				WATER CONTACTED @ 22 FT BGS
			27					AS ABOVE, GRADES TO BLACK (5Y 2.5/1)
	3.4		46	23				
			40					
	8.6		4	24		SP/SM		(23.5'-24') SAND, DARK YELLOWISH BROWN (10YR 4/6)
			16					FINE TO MEDIUM SAND, TRACE SILT, MOIST VERY LOOSE
		AS-B-25 (0750)	35	25				(24'-25') SAND, DARK OLIVE GRAY (5Y 3/2), FINE TO
	0.6		20					MEDIUM SAND TRACE COARSE, POORLY GRADED, MOIST, VERY LOOSE
			46	26				(25-25.5') AS ABOVE
			50					(25.5-26.5') AS ABOVE, COLOR CHANGE TO OLIVE BROWN
				27				(2.5Y 4/4), MOTTLED OXIDATION
	0.5							NO RECOVERY (12"); SAND, OLIVE (5Y 4/3), FINE TO
		(6")	50	28				MEDIUM SAND, TRACE SILT, MOIST, VERY LOOSE
			12			SP/SM		(28-29') AS ABOVE
			37	29		SP		(29'-29.5') SAND, DARK YELLOWISH BROWN (10YR 4/4) FINE
→ ETO MEDIUM CHIPS			54					TO MEDIUM TRACE COARSE SAND, POORLY GRADED, MOIST, VERY LOOSE
	1.0	AS-B-30 (0815)	10	30				AS ABOVE, COLOR CHANGE TO DARK GRAYISH BROWN
			15					(2.5Y 4/2)
			23	31				
			7					AS ABOVE
	0.4		9	32				
			9					
	0.3		4	33				AS ABOVE
→ #2/12 SAND			7					
	0.2		12	34				
(+ SAND)			3					(34-35') AS ABOVE
	0.2	AS-B-35 (0840)	9	35		SC/SM		(35-35.5') CLAYEY SAND W/ SILT, DARK OLIVE (5Y 6/3)
		AS-B-35.5 (0845)	25					FINE SAND, POORLY GRADED, LOOSE
				36				
								BOTTOM OF BORING AT 35.5', OVERDRILL TO
				37				38.5' TO SET 3' SUMP FROM 35.5-38.5 bgs
				38				
				39				
				40				

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

ARCADIS

Well Construction Log

(Unconsolidated)



351646

Project B0047339.2015 Well AS-13

Town/City Oakland

County Alameda State CA

Permit No. W2015-1029

Land-Surface Elevation and Datum:

_____ feet ☐ Surveyed ☐ Estimated

Installation Date(s) 12/9/15

Drilling Method Hollow Stem Auger

Drilling Contractor Cascade Drilling

Drilling Fluid _____

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Air Sparge well

Remarks _____

Prepared by Carl Edwards

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0293917

Page 1 of 1

Owner's Well Number AS-14

Date Work Began 12/07/2015 Date Work Ended 12/8/2015

Local Permit Agency Alameda County Public Works

Permit Number W2015-1029 Permit Date 11/19/15

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N Latitude W Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Hollow Stem Auger Drilling Fluid

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
		SEE ATTACHED GEOLOGIC LOG

Total Depth of Boring 40.5 Feet

Total Depth of Completed Well 40.5 Feet

Well Owner

Name Chevron Environmental Management Company (CEMC)

Mailing Address 6101 Bollinger Canyon Rd #5119

City San Ramon State CA Zip 94583

Well Location

Address 706 Harrison Street

City Oakland County Alameda

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

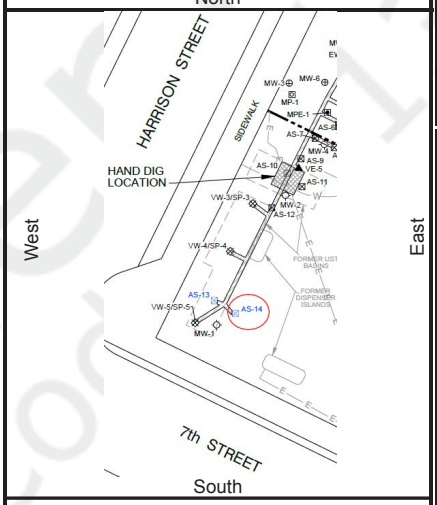
Datum Dec. Lat. Dec. Long.

APN Book 1 Page 185 Parcel 26

Township Range Section

Location Sketch

(Sketch must be drawn by hand after form is printed.)



Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
◉ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level (Feet) Date Measured

Estimated Yield * (GPM) Test Type

Test Length (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	36	8	Blank	PVC Sch. 80		2		
36	38	8	Screen	PVC Sch. 80		2	Milled Slots	0.010
38	41	8	Blank	PVC Sch. 80		2		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	32	Cement	Portland Type II-V
32	35	Bentonite	Cetco Med. Chips
35	41	Filter Pack	#2/12 Sand

Attachments

☑ Geologic Log
☑ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☐ Other

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name
Person, Firm or Corporation

Address City CA State Zip

Signed
C-57 Licensed Water Well Contractor

Date Signed C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ARCADIS

EXPLORATORY BORING LOG

project no: B0047339.2015.00008 | date: 12- 7 -15 | boring number: AS-14

client: Chevron - 351646

location: 706/726 Harrison Street, Oakland, CA

logged by: CAE

driller/helper: Cascade Drilling

page 1 of 1

field location of boring:

drilling method: Hollow Stem Auger
hole diameter: 8"
casing diameter: 2"
well completion data: See Well Const. Log

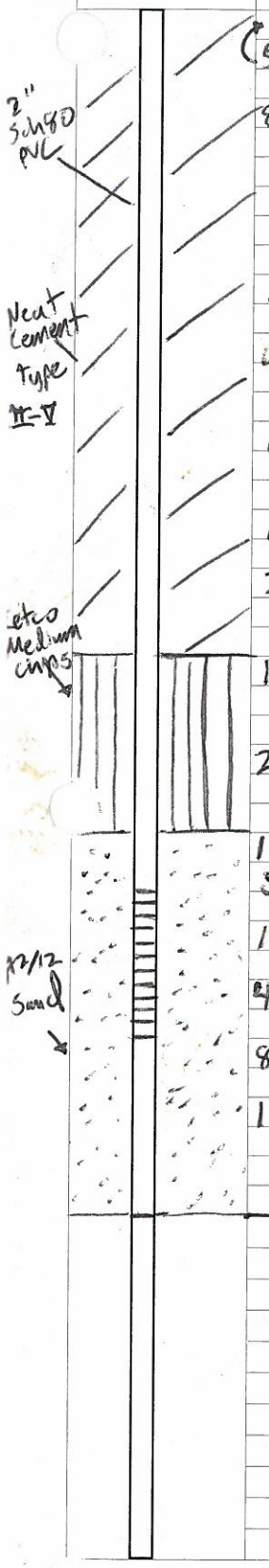
ground elevation: datum:

water level / time / date

boring/well construction	headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	
				1			3" concrete 21" CDF
	0.0			2		SP	Sand, brown (10YR 4/3), fine to medium sand, poorly graded, damp, very loose.
	0.0	AS-14-5		5		SM	Silty sand, brown (10YR 4/3), fine to medium sand, trace clay, moist, loose, oxidation.
	0.0			8			Sand, brown (10YR 4/3), fine to medium sand, trace silt, poorly graded, moist, very loose.
	0.0	AS-14-10 818	22 42 43	10			
	0.0		21 23 20 13 19 11	12		SP	Sand, grayish brown (10YR 5/2), fine to medium sand, trace coarse sand, poorly graded, moist, very loose
	1.0		16 30 36	14			
	0.6	AS-14-15 829	40 (6") 50	15			Sand, olive (5Y 4/3), fine to medium sand, poorly graded, very loose, moist, odor.
	42.3		22 32 22	17			1" silty sand lense at 16' bgs.
	558.9		23 (2") 50	18			No recovery As above, dark greenish gray (Gley 1 4/10Y).
	359.7	AS-14-20 910	22 42	20			18'2" - 19' No recovery 19' - 19' 3" Sand, dark yellowish brown (10YR 4/6) fine to medium sand, trace silt, moist, very loose

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

boring/well construction	headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	project number: B0047339.2015.00008	boring number: AS-14 page 2 of



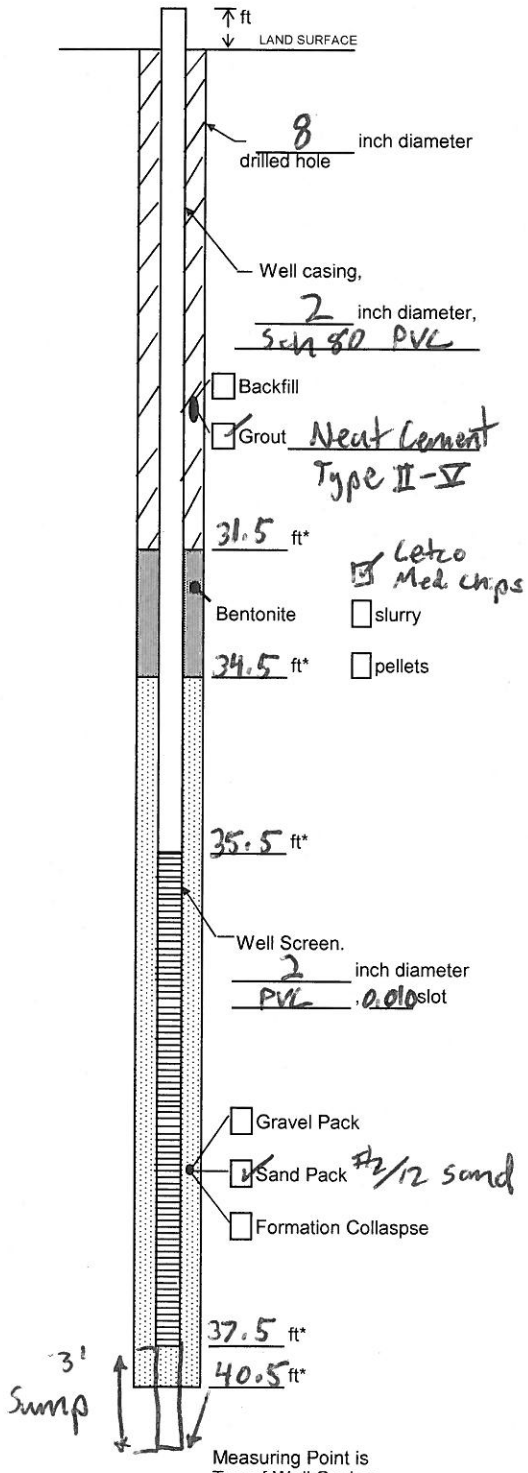
	50.7			21			No recovery
	86.5		18 (6") 50	22			Sand, very dark greenish gray (5GY 1 3/5GY), fine to medium sand, poorly graded, wet, very loose
	9.8		26 (6") 50	23			No recovery Sand, dark greenish gray (5GY 1 7/10Y), fine to med sand, trace coarse sand, poorly graded, wet, very loose.
				24			No recovery As above
	1.4	AS-14-25 1004 928	30 (5") 50	25			No recovery As above; color change to dark olive gray (5Y 3/2)
	4.4		42.5 (2") 50	26			
	0.1		42 (6") 50	27		SP	No recovery As above; color change to olive brown (2.5Y 4/3)
	1.8		20 (1") 50	28			No recovery Sand, olive brown (2.5Y 4/3), fine to medium sand, trace coarse sand, poorly graded, wet, very loose
	2.4	AS-14-30 9726 1005	15 (6") 50	29			
	18.4		5 (3") 50	30			As above
	2.0		5 30 (3") 50	31			As above
	1.5		7 50	32			As above
	5.6	AS-14-35 1108	20 7 15	33			Sand, olive gray (5Y 4/2), fine to medium sand, trace coarse sand, poorly graded, wet very loose.
	13.3		22 16 (2") 50	34			
	4.1			35			
	8.4			36			
	1.3			37			
				38		SM	Silty sand with clay, light yellowish brown (2.5Y 6/3), fine to medium sand, wet, very loose
				39		CL	Sandy clay with silt, pale olive (5Y 6/3), fine sand, medium plasticity, soft, wet.
				40			Bottom of boring at 39'. Overdrill to 40.5' to set 3' sump from 37.5'-40.5' bgs.
				41			
				42			
				43			
				44			
				45			
				46			

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

ARCADIS

Well Construction Log

(Unconsolidated)



351646

Project B0047339.2015 Well AS-14

Town/City Oakland

County Alameda State CA

Permit No. W2015-1029

Land-Surface Elevation and Datum:

_____ feet ☐ Surveyed ☐ Estimated

Installation Date(s) 12/8/15

Drilling Method Hollow Stem Auger

Drilling Contractor Cascade Drilling

Drilling Fluid _____

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Air Sparge Well

Remarks _____

Prepared by Carl Edwards

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

ARCADIS

EXPLORATORY BORING LOG

project no:	B0047339.2015.00008	date:	12- 9 -15
client:	Chevron - 351646		
location:	706/726 Harrison Street, Oakland, CA		
logged by:	SEAN MAUREL (SM)		
driller/helper:	CASCADE DRILLING		

boring number: SV-1

page 1 of 1

field location of boring:

drilling method: HAND AUGER
hole diameter: 2"
casing diameter: SV PROBE
well completion data:

ground elevation: datum:

boring/well construction	headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level / time / date (7.5YR 3/2)
INTERMIXED CHIPS	0.1			1		SP/SM	SAND, DARK BROWN, FINE TO MEDIUM SAND, TRACE SILT, POORLY GRADED, MOIST, VERY LOOSE
		SV-1-2 (1055)		2		SP/SM	AS ABOVE, COLOR CHANGE TO DARK BROWN (7.5YR 3/3)
DARK CHIPS	0.1			3			AS ABOVE, COLOR CHANGE TO DARK YELLOWISH BROWN (10YR 3/4) (10YR 3/6)
				4		SP	SAND, DARK YELLOWISH BROWN, FINE TO MEDIUM SAND, TRACE COARSE SAND, POORLY GRADED, MOIST VERY LOOSE
#2/12 SAND	0.1	SV-1-5 (1100)		5		SP	AS ABOVE, COLOR CHANGE TO DARK YELLOWISH BROWN (10YR 4/6)
1" SCREEN				6			
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

ARCADIS

EXPLORATORY BORING LOG

project no:	B0047339.2015.00008	date:	12- 09 -15
client:	Chevron - 351646	boring number:	SV-2
location:	706/726 Harrison Street, Oakland, CA	page 1 of 1	
logged by:	CAE		
driller/helper:	Cascade Drilling (Joe, Ryan, Carlos)		

field location of boring:

drilling method: Hand Auger
hole diameter: 2"
casing diameter: 1/4" tubing / 1/2" screen length
well completion data:

ground elevation: datum:

boring/well construction	headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level / time / date	
Hydrated Bentonite granules; 1/4" Teflon; Dry Bentonite Granules; #2/12 Sand	0.1			1				4" of asphalt; 4" of gravel fill material
	0.1	SV-2-2 1125		2		SP		Sand with silt, very dark grayish brown (10YR 3/2), fine sand, poorly graded, very loose, damp, brick fragments
	0.1			3		SP		As above; no brick fragments. Color change to dark brown (10YR 3/3)
	0.1			4				
	0.2	SV-2-5 1130		5				Sand, dark yellowish brown (10YR 4/6), fine sand, trace silt, poorly graded, very loose, damp
				6				Bottom of boring at 5' bgs.
				7				
				8				
				9				
				10				
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
				19				
				20				

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

ARCADIS

EXPLORATORY BORING LOG

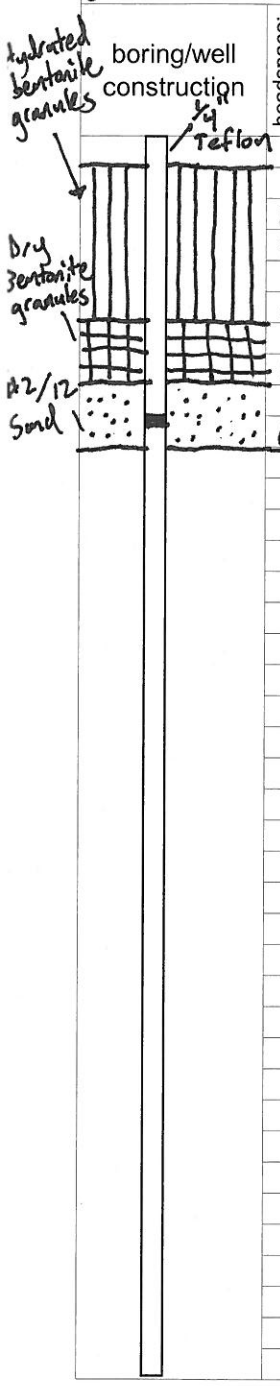
project no: B0047339.2015.00008
client: Chevron - 351646
location: 706/726 Harrison Street, Oakland, CA
logged by: CAE
driller/helper: Cascade Drilling (Joe, Ryan, Carlos)
date: 12-09-15
boring number: SV-3
page 1 of 1

field location of boring:

drilling method: Hand Auger
hole diameter: 2"
casing diameter: 1/4" tubing 1/2" screen length
well completion data:

ground elevation: datum:

water level —
time —
date —



headspace: gastech/PID/FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	
0.1			1			4" of asphalt 4" of gravel fill material
0.0	SV-3-2 1025		2		SP	Sand with silt, dark brown (10YR 3/3), fine sand, poorly graded, damp, very loose.
0.1			3			
0.1			4			As above, dark yellowish brown (10YR 4/4)
0.1	SV-3-5 1030		5			Sand, dark yellowish brown (10YR 4/6) fine sand, trace silt, poorly graded, damp, very loose
			6			
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

APPENDIX D

Laboratory Analytical Reports

Date of Report: 12/11/2015

Tamera Rogers

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Client Project:	351646
BCL Project:	0752
BCL Work Order:	1531228
Invoice ID:	B221218

Enclosed are the results of analyses for samples received by the laboratory on 12/7/2015. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Molly Meyers

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Table of Contents

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#: 15-31228

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:		
Contact & Company Name: TAMERA ROGERS	Telephone: 408-239-9616	
Address: 6296 SAN IGNACIO AVE, STE C+D	Fax:	
City: SAN JOSE State: CA Zip: 95119	E-mail Address: Tamera.Rogers@arcadis.com	
Project Name/Location (City, State): CHEVRON #351646 (OAKLAND, CA)	Project #: B0047339.2014	
Sampler's Printed Name: SEAN MAUBEL	Sampler's Signature:	

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD: TPH-D (EPA 8260B)	BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES (EPA 8260B)	OXYGENATES (EPA 8260B)
AS-13-5-151207-1	12/7/15	0955		✓	S					X	X	X
AS-14-5-151207-2	↓	1200		✓	S					X	X	X

CHK BY

DISTRIBUTION
SUB-OUT

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

REMARKS

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: BC LABS	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: SEAN MAUBEL	Printed Name: GARY BOGAN	Printed Name: GARY BOGAN	Printed Name: JOSE BARCENAS
☐ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: STANDARD	Sample Receipt:	Firm: ARCADIS WC	Firm/Courier: BC Lab	Firm/Courier: BC Lab	Firm: BC LABS
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 12/7/15 1:27 pm	Date/Time: 12-7-15 1327	Date/Time: 12-7-15 1830	Date/Time: 12/7/15 18:30

20730826 CofC AR Form 01.12.2007

REL. 12/7/15 2000 2000

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Chain of Custody and Cooler Receipt Form for 1531228 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 15-31228

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____	Other ☐ (Specify)_____	

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☐ No ☐ Description(s) match COC? Yes ☐ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 0.97 Container: VOA Thermometer ID: 208 Date/Time 12/7/15

Temperature: (A) 1.5 °C / (C) -1 °C Analyst Init KIB 2205

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
4oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
TCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT 099	A→D	A→D								
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: JDL Date/Time: 12-8-15 0825 Rev 20 07/24/2015

A = Actual / C = Corrected

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531228-01	**COC Number:**	---	**Receive Date:**	12/07/2015 22:00
	Project Number:	0752	**Sampling Date:**	12/07/2015 09:55
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-13-5-151207	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-13			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1531228-02	**COC Number:**	---	**Receive Date:**	12/07/2015 22:00
	Project Number:	0752	**Sampling Date:**	12/07/2015 12:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-5-151207	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-14			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531228-01 | **Client Sample Name:** 0752, AS-13-5-151207, 12/7/2015 9:55:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	93.2	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.3	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	96.4	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/08/15	12/10/15 10:49	ADC	MS-V2	0.960	BYL0786

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531228-02 | **Client Sample Name:** 0752, AS-14-5-151207, 12/7/2015 12:00:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0044		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0044		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0044		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0044		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0044		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0044		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0089		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0044		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.044		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0044		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.89		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0044		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.18		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	88.0	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	96.0	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	94.7	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/08/15	12/09/15 17:52	ADC	MS-V2	0.888	BYL0786

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYL0786						
Benzene	BYL0786-BLK1	ND	mg/kg	0.0050		
1,2-Dibromoethane	BYL0786-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane	BYL0786-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BYL0786-BLK1	ND	mg/kg	0.0050		
Methyl t-butyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
Toluene	BYL0786-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BYL0786-BLK1	ND	mg/kg	0.010		
t-Amyl Methyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
t-Butyl alcohol	BYL0786-BLK1	ND	mg/kg	0.050		
Diisopropyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
Ethanol	BYL0786-BLK1	ND	mg/kg	1.0		
Ethyl t-butyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
Total Purgeable Petroleum Hydrocarbons	BYL0786-BLK1	ND	mg/kg	0.20		
1,2-Dichloroethane-d4 (Surrogate)	**BYL0786-BLK1**	**89.2**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**BYL0786-BLK1**	**94.6**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**BYL0786-BLK1**	**94.1**	%	**74 - 121 (LCL - UCL)**		

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYL0786										
Benzene	BYL0786-BS1	LCS	0.11287	0.12500	mg/kg	90.3		70 - 130		
Toluene	BYL0786-BS1	LCS	0.11851	0.12500	mg/kg	94.8		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BYL0786-BS1	LCS	0.045120	0.050000	mg/kg	90.2		70 - 121		
Toluene-d8 (Surrogate)	BYL0786-BS1	LCS	0.047900	0.050000	mg/kg	95.8		81 - 117		
4-Bromofluorobenzene (Surrogate)	BYL0786-BS1	LCS	0.048060	0.050000	mg/kg	96.1		74 - 121		

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYL0786	Used client sample: N										
Benzene	MS	1528561-63	ND	0.10668	0.12500	mg/kg		85.3		70 - 130	
	MSD	1528561-63	ND	0.10592	0.12500	mg/kg	0.7	84.7	20	70 - 130	
Toluene	MS	1528561-63	ND	0.11309	0.12500	mg/kg		90.5		70 - 130	
	MSD	1528561-63	ND	0.12050	0.12500	mg/kg	6.3	96.4	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1528561-63	ND	0.043140	0.050000	mg/kg		86.3		70 - 121	
	MSD	1528561-63	ND	0.042620	0.050000	mg/kg	1.2	85.2		70 - 121	
Toluene-d8 (Surrogate)	MS	1528561-63	ND	0.046490	0.050000	mg/kg		93.0		81 - 117	
	MSD	1528561-63	ND	0.048730	0.050000	mg/kg	4.7	97.5		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1528561-63	ND	0.046890	0.050000	mg/kg		93.8		74 - 121	
	MSD	1528561-63	ND	0.049470	0.050000	mg/kg	5.4	98.9		74 - 121	

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/11/2015 14:49
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Notes And Definitions

MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit

Date of Report: 12/16/2015

Tamera Rogers

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Client Project:	351646
BCL Project:	0752
BCL Work Order:	1531397
Invoice ID:	B221684

Enclosed are the results of analyses for samples received by the laboratory on 12/8/2015. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Molly Meyers

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Table of Contents

Chain of Custody and Cooler Receipt Form for 1531397 Page 1 of 2

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#: 15-31397

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: TAMERA ROGERS	Telephone: 408-239-9616
Address: 6296 SAN IGNACIO AVE, STE LTD	Fax:
City: SAN JOSE State: CA Zip: 95119	E-mail Address: Tamera.Rogers@arcadis.com
Project Name/Location (City, State): CHEVRON #351646 (OAKLAND, CA)	Project #: B0047339.2014
Sampler's Printed Name: SEAN MAUREL	Sampler's Signature: [signature]

Preservative / Filtered (✓) / # of Containers / Container Information

PARAMETER ANALYSIS & METHOD

	Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TPPH (EPA 8260B)	BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES (EPA 8260B)	OXYGENATES (EPA 8260B)					REMARKS
-1	TB-151208	12/8/15	0800	—	—	W	X	X	X					
-2	AS-14-10-151208	↓	0818		✓	SO	X	X	X					
-3	AS-14-15-151208	↓	0831		✓	SO	X	X	X					
-4	AS-14-20-151208	↓	0910		✓	SO	X	X	X					
-5	AS-14-25-151208	↓	0928		✓	SO	X	X	X					
-6	AS-14-30-151208	↓	1005		✓	SO	X	X	X					
-7	AS-14-35-151208	↓	1108		✓	SO	X	X	X					

CHK BY [initials] DISTRIBUTION [initials] SUB-OUT ☐

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: G. Other: H. Other:

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: 10. Other:

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other:

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: BC LABS	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact
☑ Cooler packed with ice (✓)	
Specify Turnaround Requirements: STANDARD	Sample Receipt:
Shipping Tracking #:	Condition/Cooler Temp:

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name	SEAN MAUREL	GARY BOGAN	[signature]	Tiffany Thompson
Signature	[signature]	[signature]	GARY BOGAN	[signature]
Firm	ARCADIS	BC LAB	BC LAB	BCLABS
Date/Time	12/8/15 1416	12-8-15 1416	12-8-15 1830	12-8-15 2145

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

REC. [initials] 12/8/15 18:30 REL- [initials] 12/8/15 2145

Chain of Custody and Cooler Receipt Form for 1531397 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 15-31397

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____	Other ☐ (Specify)_____	

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ (Intact? Yes ☐ No ☐) Containers ☐ (Intact? Yes ☐ No ☐) None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 0.97 Container: VOA Thermometer ID: 208 Date/Time 12/8/15 8127

Temperature: (A) 1.9 °C / (C) 1.5 °C Analyst Init KIB

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK	A									
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT		ABCD	ABCD	ABCD	ABCD	ABCD	ABCD			
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: KIB Date/Time: 12/8/15 2138

A = Actual / C = Corrected

Rev 20 07/24/2015

[S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 13:55
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531397-01	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 08:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	TB-151208	**Lab Matrix:**	Water
	Sampled By:	AREC	**Sample Type:**	Blank Water
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): TB			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1531397-02	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 08:18
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-10-151208	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-14			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1531397-03	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 08:39
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-15-151208	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-14			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 13:55
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531397-04	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 09:10
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-20-151208	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-14			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1531397-05	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 09:28
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-25-151208	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-14			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1531397-06	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 10:05
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-30-151208	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil
	Delivery Work Order:			
	Global ID:			
	Location ID (FieldPoint): AS-14			
	Matrix: SO			
	Sample QC Type (SACode): CS			
	Cooler ID:			

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Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531397-07	**COC Number:**	---	**Receive Date:**	12/08/2015 21:45
	Project Number:	0752	**Sampling Date:**	12/08/2015 11:08
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-14-35-151208	**Lab Matrix:**	Solids
	Sampled By:	AREC	**Sample Type:**	Soil

Delivery Work Order:
Global ID:
Location ID (FieldPoint): AS-14
Matrix: SO
Sample QC Type (SACode): CS
Cooler ID:

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1531397-01 | **Client Sample Name:** 0752, TB-151208, 12/8/2015 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	ug/L	50		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	94.4	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	98.0	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	95.3	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/09/15 12:52	JMS	MS-V14	1	BYL0692

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Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531397-02 | **Client Sample Name:** 0752, AS-14-10-151208, 12/8/2015 8:18:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	97.2	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	93.3	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	96.8	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/10/15 18:23	ADC	MS-V2	0.929	BYL0786

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Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531397-03 | **Client Sample Name:** 0752, AS-14-15-151208, 12/8/2015 8:39:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	91.6	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	96.5	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.0	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/10/15 11:35	ADC	MS-V2	0.935	BYL0786

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Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531397-04 | **Client Sample Name:** 0752, AS-14-20-151208, 12/8/2015 9:10:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	**0.40**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	**0.30**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	**0.45**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Total Xylenes	**1.0**	**mg/kg**	**0.010**		**EPA-8260B**	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	**23**	**mg/kg**	**10**		**Luft-GC/MS**	ND	**A01**	2
1,2-Dichloroethane-d4 (Surrogate)	85.7	%	70 - 121 (LCL - UCL)		EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	84.4	%	70 - 121 (LCL - UCL)		EPA-8260B			2
Toluene-d8 (Surrogate)	94.8	%	81 - 117 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	99.2	%	81 - 117 (LCL - UCL)		EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	103	%	74 - 121 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.9	%	74 - 121 (LCL - UCL)		EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/09/15 19:00	ADC	MS-V2	0.967	BYL0786
2	EPA-8260B	12/09/15	12/10/15 12:43	ADC	MS-V2	48.356	BYL0786

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Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531397-05 | **Client Sample Name:** 0752, AS-14-25-151208, 12/8/2015 9:28:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	**0.33**	**mg/kg**	**0.0045**		**EPA-8260B**	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0045		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0045		EPA-8260B	ND		1
Ethylbenzene	**0.12**	**mg/kg**	**0.0045**		**EPA-8260B**	ND		1
Methyl t-butyl ether	**0.10**	**mg/kg**	**0.0045**		**EPA-8260B**	ND		1
Toluene	**0.15**	**mg/kg**	**0.0045**		**EPA-8260B**	ND		1
Total Xylenes	**0.40**	**mg/kg**	**0.0090**		**EPA-8260B**	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0045		EPA-8260B	ND		1
t-Butyl alcohol	**0.88**	**mg/kg**	**0.045**		**EPA-8260B**	ND		1
Diisopropyl ether	ND	mg/kg	0.0045		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.90		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0045		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	**5.2**	**mg/kg**	**4.5**		**Luft-GC/MS**	ND	**A01**	2
1,2-Dichloroethane-d4 (Surrogate)	88.0	%	70 - 121 (LCL - UCL)		EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	76.1	%	70 - 121 (LCL - UCL)		EPA-8260B			2
Toluene-d8 (Surrogate)	101	%	81 - 117 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	96.7	%	81 - 117 (LCL - UCL)		EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	100	%	74 - 121 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	91.0	%	74 - 121 (LCL - UCL)		EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/09/15 19:22	ADC	MS-V2	0.898	BYL0786
2	EPA-8260B	12/09/15	12/12/15 16:47	ADC	MS-V2	22.442	BYL0786

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Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531397-06 | **Client Sample Name:** 0752, AS-14-30-151208, 12/8/2015 10:05:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	**0.13**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	**0.060**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Methyl t-butyl ether	**0.024**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Toluene	**0.10**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Total Xylenes	**0.23**	**mg/kg**	**0.010**		**EPA-8260B**	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	**0.31**	**mg/kg**	**0.050**		**EPA-8260B**	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	**1.6**	**mg/kg**	**0.20**		**Luft-GC/MS**	ND		1
1,2-Dichloroethane-d4 (Surrogate)	90.0	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	93.4	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/09/15 19:48	ADC	MS-V2	0.994	BYL0786

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Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531397-07 | **Client Sample Name:** 0752, AS-14-35-151208, 12/8/2015 11:08:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	**0.11**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	**0.085**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Methyl t-butyl ether	**0.026**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Toluene	**0.10**	**mg/kg**	**0.0050**		**EPA-8260B**	ND		1
Total Xylenes	**0.31**	**mg/kg**	**0.010**		**EPA-8260B**	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	**0.17**	**mg/kg**	**0.050**		**EPA-8260B**	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	**6.8**	**mg/kg**	**5.0**		**Luft-GC/MS**	ND	**A01**	2
1,2-Dichloroethane-d4 (Surrogate)	87.9	%	70 - 121 (LCL - UCL)		EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	77.3	%	70 - 121 (LCL - UCL)		EPA-8260B			2
Toluene-d8 (Surrogate)	95.1	%	81 - 117 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	92.9	%	81 - 117 (LCL - UCL)		EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	107	%	74 - 121 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	96.5	%	74 - 121 (LCL - UCL)		EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/09/15	12/09/15 22:26	ADC	MS-V2	1.018	BYL0786
2	EPA-8260B	12/09/15	12/15/15 17:45	ADC	MS-V2	25.458	BYL0786

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYL0692						
Benzene	BYL0692-BLK1	ND	ug/L	0.50		
1,2-Dibromoethane	BYL0692-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane	BYL0692-BLK1	ND	ug/L	0.50		
Ethylbenzene	BYL0692-BLK1	ND	ug/L	0.50		
Methyl t-butyl ether	BYL0692-BLK1	ND	ug/L	0.50		
Toluene	BYL0692-BLK1	ND	ug/L	0.50		
Total Xylenes	BYL0692-BLK1	ND	ug/L	1.0		
t-Amyl Methyl ether	BYL0692-BLK1	ND	ug/L	0.50		
t-Butyl alcohol	BYL0692-BLK1	ND	ug/L	10		
Diisopropyl ether	BYL0692-BLK1	ND	ug/L	0.50		
Ethanol	BYL0692-BLK1	ND	ug/L	250		
Ethyl t-butyl ether	BYL0692-BLK1	ND	ug/L	0.50		
Total Purgeable Petroleum Hydrocarbons	BYL0692-BLK1	ND	ug/L	50		
1,2-Dichloroethane-d4 (Surrogate)	**BYL0692-BLK1**	**96.7**	%	**75 - 125 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**BYL0692-BLK1**	**97.5**	%	**80 - 120 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**BYL0692-BLK1**	**94.1**	%	**80 - 120 (LCL - UCL)**		

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Project: 0752
Project Number: 351646
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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYL0692										
Benzene	BYL0692-BS1	LCS	24.355	25.000	ug/L	97.4		70 - 130		
Toluene	BYL0692-BS1	LCS	25.936	25.000	ug/L	104		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BYL0692-BS1	LCS	9.4800	10.000	ug/L	94.8		75 - 125		
Toluene-d8 (Surrogate)	BYL0692-BS1	LCS	9.7800	10.000	ug/L	97.8		80 - 120		
4-Bromofluorobenzene (Surrogate)	BYL0692-BS1	LCS	9.7200	10.000	ug/L	97.2		80 - 120		

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYL0692	Used client sample: N										
Benzene	MS	1531217-10	ND	26.194	25.000	ug/L		105		70 - 130	
	MSD	1531217-10	ND	24.982	25.000	ug/L	4.7	99.9	20	70 - 130	
Toluene	MS	1531217-10	ND	24.901	25.000	ug/L		99.6		70 - 130	
	MSD	1531217-10	ND	26.956	25.000	ug/L	7.9	108	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1531217-10	ND	9.8000	10.000	ug/L		98.0		75 - 125	
	MSD	1531217-10	ND	9.2000	10.000	ug/L	6.3	92.0		75 - 125	
Toluene-d8 (Surrogate)	MS	1531217-10	ND	9.6300	10.000	ug/L		96.3		80 - 120	
	MSD	1531217-10	ND	9.8300	10.000	ug/L	2.1	98.3		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	1531217-10	ND	9.6400	10.000	ug/L		96.4		80 - 120	
	MSD	1531217-10	ND	9.3900	10.000	ug/L	2.6	93.9		80 - 120	

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Reported: 12/16/2015 13:55
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYL0786						
Benzene	BYL0786-BLK1	ND	mg/kg	0.0050		
1,2-Dibromoethane	BYL0786-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane	BYL0786-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BYL0786-BLK1	ND	mg/kg	0.0050		
Methyl t-butyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
Toluene	BYL0786-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BYL0786-BLK1	ND	mg/kg	0.010		
t-Amyl Methyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
t-Butyl alcohol	BYL0786-BLK1	ND	mg/kg	0.050		
Diisopropyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
Ethanol	BYL0786-BLK1	ND	mg/kg	1.0		
Ethyl t-butyl ether	BYL0786-BLK1	ND	mg/kg	0.0050		
Total Purgeable Petroleum Hydrocarbons	BYL0786-BLK1	ND	mg/kg	0.20		
1,2-Dichloroethane-d4 (Surrogate)	**BYL0786-BLK1**	**89.2**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**BYL0786-BLK1**	**94.6**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**BYL0786-BLK1**	**94.1**	%	**74 - 121 (LCL - UCL)**		

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 13:55
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYL0786										
Benzene	BYL0786-BS1	LCS	0.11287	0.12500	mg/kg	90.3		70 - 130		
Toluene	BYL0786-BS1	LCS	0.11851	0.12500	mg/kg	94.8		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BYL0786-BS1	LCS	0.045120	0.050000	mg/kg	90.2		70 - 121		
Toluene-d8 (Surrogate)	BYL0786-BS1	LCS	0.047900	0.050000	mg/kg	95.8		81 - 117		
4-Bromofluorobenzene (Surrogate)	BYL0786-BS1	LCS	0.048060	0.050000	mg/kg	96.1		74 - 121		

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 13:55
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYL0786	Used client sample: N										
Benzene	MS	1528561-63	ND	0.10668	0.12500	mg/kg		85.3		70 - 130	
	MSD	1528561-63	ND	0.10592	0.12500	mg/kg	0.7	84.7	20	70 - 130	
Toluene	MS	1528561-63	ND	0.11309	0.12500	mg/kg		90.5		70 - 130	
	MSD	1528561-63	ND	0.12050	0.12500	mg/kg	6.3	96.4	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1528561-63	ND	0.043140	0.050000	mg/kg		86.3		70 - 121	
	MSD	1528561-63	ND	0.042620	0.050000	mg/kg	1.2	85.2		70 - 121	
Toluene-d8 (Surrogate)	MS	1528561-63	ND	0.046490	0.050000	mg/kg		93.0		81 - 117	
	MSD	1528561-63	ND	0.048730	0.050000	mg/kg	4.7	97.5		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1528561-63	ND	0.046890	0.050000	mg/kg		93.8		74 - 121	
	MSD	1528561-63	ND	0.049470	0.050000	mg/kg	5.4	98.9		74 - 121	

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Reported: 12/16/2015 13:55
Project: 0752
Project Number: 351646
Project Manager: Tamera Rogers

Notes And Definitions

MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.

Date of Report: 12/16/2015

Kathy Brandt

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Client Project:	351646
BCL Project:	0752
BCL Work Order:	1531607
Invoice ID:	B221697

Enclosed are the results of analyses for samples received by the laboratory on 12/9/2015. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Molly Meyers

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Table of Contents

ARCADIS
Infrastructure, environment, buildings

ID#: 15561

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #: 15-31607

Send Results to:

Contact & Company Name: TAMERA ROGERS	Telephone: 408-239-9616
Address: 6296 SAN IGNACIO AVE, STE C+D	Fax:
City: SAN JOSE State: CA Zip: 95119	E-mail Address: Tamera.Rogers@arcadis.com
Project Name/Location (City, State): CHEVRON # 351646 (OAKLAND, CA)	Project #: 30047359.2014
Sampler's Printed Name: SEAN MAUREL	Sampler's Signature:

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: _____ G. Other: _____ H. Other: _____

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: _____ 10. Other: _____

Matrix Key: SO - Soil W - Water T - Tissue SE - Sediment SL - Sludge A - Air NL - NAPL/Oil SW - Sample Wipe Other: _____

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	TPH (EPA 8260B)	Benzene, Toluene, Ethylbenzene, Total Xylenes (EPA 8260B)	Oxygenates (EPA 8260B)	REMARKS
TB-151209	12/9/15	0800	-1	—	W					X	X	X	
AS-13-20-151209		0730	-2	✓	So					X	X	X	
AS-13-25-151209		0750	-3	✓	So					X	X	X	
AS-13-30-151209		0815	-4	✓	So					X	X	X	
AS-13-35-151209	↓	0840	-5	✓	So					X	X	X	
AS-13-35.5-151209	12/9/15	0845	-6	✓	So					X	X	X	ON HOLD
AS-13-10-151208	12/8/15	1525	-7	✓	So					X	X	X	
AS-13-15-151208	↓	1545	-8	✓	So					X	X	X	
AS-13-17.5-151208	12/8/15	1600	-9	✓	So					X	X	X	ON HOLD
SV-1-2-151209	12/9/15	1055	-10	✓	So					X	X	X	
SV-1-5-151209		1100	-11	✓	So					X	X	X	
SV-3-2-151209		1025	-12	✓	So					X	X	X	
SV-3-5-151209		1030	-13	✓	So					X	X	X	
SV-2-2-151209	↓	1125	-14	✓	So					X	X	X	
SV-2-5-151209	12/9/15	1130	-15	✓	So					X	X	X	

CHK BY: JHL

DISTRIBUTION

SUB-OUT ☐

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: BC LABS	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: SEAN MAUREL	Printed Name: GARY BOGAN	Printed Name: GARY BOGAN	Printed Name: JOSE BARCENO
☑ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: STANDARD	Sample Receipt:	Firm: ARCADIS	Firm/Courier: BC LAB	Firm/Courier: BC LAB	Firm: BCLABS
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 12/9/15 1338	Date/Time: 12-9-15 1338	Date/Time: 12-9-15 1830	Date/Time: 12/9/15 19:00

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

REL. 12/9/15 2359 2359 12-9-15

Chain of Custody and Cooler Receipt Form for 1531607 Page 2 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 15-31607

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____	Other ☐ (Specify)_____	

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☐ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 0.97 Container: VOA Thermometer ID: 208 Date/Time 12/10/15

Temperature: (A) 2.2 °C / (C) 1.8 °C Analyst Init KJB 0022

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK 0811	A									
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT 0819		A→D	A→D	A→D	A→D	A→D	A→D	A→D	A→D	A→D
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: MM Date/Time: 12-10-15 0803

A = Actual / C = Corrected

Rev 20 07/24/2015

(S:\WPDoc\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

Chain of Custody and Cooler Receipt Form for 1531607 Page 3 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 of 2

Submission #: 15-31607

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____	Other ☐ (Specify)_____	

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☐ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 0.97 Container: VOA Thermometer ID: 208 Date/Time 12/10/15

Temperature: (A) 2.2 °C / (C) 1.8 °C Analyst Init KJB 0022

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT 099	A→D	A→D	A→D	A→D	A→D					
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: _____ Date/Time: 12-10-15 0803

A = Actual / C = Corrected

Rev 20 07/24/2015

(S:\WPDoc\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531607-01	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/09/2015 08:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	TB-151209	**Lab Matrix:**	Water
	Sampled By:	ARCF	**Sample Type:**	Trip Blank
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	TB
			Matrix:	W
			Sample QC Type (SACode):	CS
			Cooler ID:	
1531607-02	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/09/2015 07:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-13-20-151209	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	AS-13
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1531607-03	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/09/2015 07:50
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-13-25-151209	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	AS-13
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information		
1531607-04	**COC Number:**	---	**Receive Date:** 12/09/2015 23:59
	Project Number:	0752	**Sampling Date:** 12/09/2015 08:15
	Sampling Location:	---	**Sample Depth:** ---
	Sampling Point:	AS-13-30-151209	**Lab Matrix:** Solids
	Sampled By:	ARCF	**Sample Type:** Soil
			Delivery Work Order:
			Global ID:
			Location ID (FieldPoint): AS-13
			Matrix: SO
			Sample QC Type (SACode): CS
			Cooler ID:
1531607-05	**COC Number:**	---	**Receive Date:** 12/09/2015 23:59
	Project Number:	0752	**Sampling Date:** 12/09/2015 08:40
	Sampling Location:	---	**Sample Depth:** ---
	Sampling Point:	AS-13-35-151209	**Lab Matrix:** Solids
	Sampled By:	ARCF	**Sample Type:** Soil
			Delivery Work Order:
			Global ID:
			Location ID (FieldPoint): AS-13
			Matrix: SO
			Sample QC Type (SACode): CS
			Cooler ID:
1531607-06	**COC Number:**	---	**Receive Date:** 12/09/2015 23:59
	Project Number:	0752	**Sampling Date:** 12/09/2015 08:45
	Sampling Location:	---	**Sample Depth:** ---
	Sampling Point:	AS-13-35.5-151209	**Lab Matrix:** Solids
	Sampled By:	ARCF	**Sample Type:** Soil
			Delivery Work Order:
			Global ID:
			Location ID (FieldPoint): AS-13
			Matrix: SO
			Sample QC Type (SACode): CS
			Cooler ID:

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531607-07	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/08/2015 15:25
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-13-10-151208	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	AS-13
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1531607-08	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/08/2015 15:45
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-13-15-151208	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	AS-13
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1531607-09	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/08/2015 16:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	AS-13-17.5-151208	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	AS-13
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information		
1531607-10	**COC Number:**	---	**Receive Date:** 12/09/2015 23:59
	Project Number:	0752	**Sampling Date:** 12/09/2015 10:55
	Sampling Location:	---	**Sample Depth:** ---
	Sampling Point:	SV-1-2-151209	**Lab Matrix:** Solids
	Sampled By:	ARCF	**Sample Type:** Soil
			Delivery Work Order:
			Global ID:
			Location ID (FieldPoint): SV-1
			Matrix: SO
			Sample QC Type (SACode): CS
			Cooler ID:
1531607-11	**COC Number:**	---	**Receive Date:** 12/09/2015 23:59
	Project Number:	0752	**Sampling Date:** 12/09/2015 11:00
	Sampling Location:	---	**Sample Depth:** ---
	Sampling Point:	SV-1-5-151209	**Lab Matrix:** Solids
	Sampled By:	ARCF	**Sample Type:** Soil
			Delivery Work Order:
			Global ID:
			Location ID (FieldPoint): SV-1
			Matrix: SO
			Sample QC Type (SACode): CS
			Cooler ID:
1531607-12	**COC Number:**	---	**Receive Date:** 12/09/2015 23:59
	Project Number:	0752	**Sampling Date:** 12/09/2015 10:25
	Sampling Location:	---	**Sample Depth:** ---
	Sampling Point:	SV-3-2-151209	**Lab Matrix:** Solids
	Sampled By:	ARCF	**Sample Type:** Soil
			Delivery Work Order:
			Global ID:
			Location ID (FieldPoint): SV-3
			Matrix: SO
			Sample QC Type (SACode): CS
			Cooler ID:

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1531607-13	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/09/2015 10:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	SV-3-5-151209	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	SV-3
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1531607-14	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/09/2015 11:25
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	SV-2-2-151209	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	SV-2
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1531607-15	**COC Number:**	---	**Receive Date:**	12/09/2015 23:59
	Project Number:	0752	**Sampling Date:**	12/09/2015 11:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	SV-2-5-151209	**Lab Matrix:**	Solids
	Sampled By:	ARCF	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	SV-2
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	

Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1531607-01 | **Client Sample Name:** 0752, TB-151209, 12/9/2015 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	ug/L	50		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.9	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.5	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/11/15	12/11/15 11:16	SE1	MS-V10	1	BYL1130

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-02 | **Client Sample Name:** 0752, AS-13-20-151209, 12/9/2015 7:30:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	**0.0060**	**mg/kg**	**0.0037**		**EPA-8260B**	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0037		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0037		EPA-8260B	ND		1
Ethylbenzene	**0.091**	**mg/kg**	**0.0037**		**EPA-8260B**	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0037		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0074		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.037		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.74		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	**980**	**mg/kg**	**150**		**Luft-GC/MS**	ND	**A01**	2
1,2-Dichloroethane-d4 (Surrogate)	104	%	70 - 121 (LCL - UCL)		EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	109	%	70 - 121 (LCL - UCL)		EPA-8260B			2
Toluene-d8 (Surrogate)	134	%	81 - 117 (LCL - UCL)		EPA-8260B		S09	1
Toluene-d8 (Surrogate)	97.3	%	81 - 117 (LCL - UCL)		EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	525	%	74 - 121 (LCL - UCL)		EPA-8260B		S09	1
4-Bromofluorobenzene (Surrogate)	106	%	74 - 121 (LCL - UCL)		EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 00:28	JML	MS-V3	0.739	BYL1097
2	EPA-8260B	12/14/15	12/16/15 06:32	JML	MS-V3	738.55	BYL1097

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Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-03 | **Client Sample Name:** 0752, AS-13-25-151209, 12/9/2015 7:50:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0043		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0043		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0043		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0043		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0043		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0043		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0087		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0043		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.043		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0043		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.87		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0043		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.17		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	86.1	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	92.0	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 17:19	JML	MS-V3	0.865	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-04 | **Client Sample Name:** 0752, AS-13-30-151209, 12/9/2015 8:15:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0037		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0037		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0037		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0037		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0037		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0074		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.037		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.74		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.15		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	118	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	94.9	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	105	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 16:56	JML	MS-V3	0.737	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-05 | **Client Sample Name:** 0752, AS-13-35-151209, 12/9/2015 8:40:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0037		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0037		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0037		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0037		EPA-8260B	ND		1
Methyl t-butyl ether	**0.014**	**mg/kg**	**0.0037**		**EPA-8260B**	ND		1
Toluene	ND	mg/kg	0.0037		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0075		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.037		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.75		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0037		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.15		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	119	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.2	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 16:33	JML	MS-V3	0.746	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-06 | **Client Sample Name:** 0752, AS-13-35.5-151209, 12/9/2015 8:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0034		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0034		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0034		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0034		EPA-8260B	ND		1
Methyl t-butyl ether	**0.17**	**mg/kg**	**0.0034**		**EPA-8260B**	ND		1
Toluene	ND	mg/kg	0.0034		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0069		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0034		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.034		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0034		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.69		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0034		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.14		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	119	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.4	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 16:10	JML	MS-V3	0.686	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-07 | **Client Sample Name:** 0752, AS-13-10-151208, 12/8/2015 3:25:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0033		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0033		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0033		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0033		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0033		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0033		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0066		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0033		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.033		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0033		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.66		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0033		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.13		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	121	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.0	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	105	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 15:46	JML	MS-V3	0.655	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-08 | **Client Sample Name:** 0752, AS-13-15-151208, 12/8/2015 3:45:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	121	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	98.4	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 15:23	JML	MS-V3	0.929	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-09 | **Client Sample Name:** 0752, AS-13-17.5-151208, 12/8/2015 4:00:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0039		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0039		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0039		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0039		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0039		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0039		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0079		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0039		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.039		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0039		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.79		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0039		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	**1.8**	**mg/kg**	**0.16**		**Luft-GC/MS**	ND		1
1,2-Dichloroethane-d4 (Surrogate)	117	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.7	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	113	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 03:11	JML	MS-V3	0.787	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-10 | **Client Sample Name:** 0752, SV-1-2-151209, 12/9/2015 10:55:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND	S08,Z1	1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND	S08,Z1	1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND	S08,Z1	1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND	S08,Z1	1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND	S08,Z1	1
1,2-Dichloroethane-d4 (Surrogate)	91.7	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	93.2	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	87.9	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 15:00	JML	MS-V3	0.907	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-11 | **Client Sample Name:** 0752, SV-1-5-151209, 12/9/2015 11:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	114	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	94.8	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.5	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 14:36	JML	MS-V3	1.006	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-12 | **Client Sample Name:** 0752, SV-3-2-151209, 12/9/2015 10:25:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0042		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0042		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0042		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0042		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0042		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0085		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.042		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.85		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.17		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	112	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	93.2	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	110	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 04:21	JML	MS-V3	0.846	BYL1097

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2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-13 | **Client Sample Name:** 0752, SV-3-5-151209, 12/9/2015 10:30:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0042		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0042		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0042		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0042		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0042		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0084		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.042		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.84		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.17		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	114	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	95.6	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 04:45	JML	MS-V3	0.845	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-14 | **Client Sample Name:** 0752, SV-2-2-151209, 12/9/2015 11:25:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.050		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Ethanol	ND	mg/kg	1.0		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0050		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.20		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	112	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	95.0	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	105	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 05:08	JML	MS-V3	0.938	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B/5035)

BCL Sample ID: 1531607-15 | **Client Sample Name:** 0752, SV-2-5-151209, 12/9/2015 11:30:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0042		EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0042		EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0042		EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0042		EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0042		EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0083		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
t-Butyl alcohol	ND	mg/kg	0.042		EPA-8260B	ND		1
Diisopropyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Ethanol	ND	mg/kg	0.83		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	mg/kg	0.0042		EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.17		Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	116	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	93.1	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	74 - 121 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	12/14/15	12/15/15 05:31	JML	MS-V3	0.832	BYL1097

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Reported: 12/16/2015 15:29
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYL1130						
Benzene	BYL1130-BLK1	ND	ug/L	0.50		
1,2-Dibromoethane	BYL1130-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane	BYL1130-BLK1	ND	ug/L	0.50		
Ethylbenzene	BYL1130-BLK1	ND	ug/L	0.50		
Methyl t-butyl ether	BYL1130-BLK1	ND	ug/L	0.50		
Toluene	BYL1130-BLK1	ND	ug/L	0.50		
Total Xylenes	BYL1130-BLK1	ND	ug/L	1.0		
t-Amyl Methyl ether	BYL1130-BLK1	ND	ug/L	0.50		
t-Butyl alcohol	BYL1130-BLK1	ND	ug/L	10		
Diisopropyl ether	BYL1130-BLK1	ND	ug/L	0.50		
Ethanol	BYL1130-BLK1	ND	ug/L	250		
Ethyl t-butyl ether	BYL1130-BLK1	ND	ug/L	0.50		
Total Purgeable Petroleum Hydrocarbons	BYL1130-BLK1	ND	ug/L	50		
1,2-Dichloroethane-d4 (Surrogate)	**BYL1130-BLK1**	**110**	%	**75 - 125 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**BYL1130-BLK1**	**100**	%	**80 - 120 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**BYL1130-BLK1**	**103**	%	**80 - 120 (LCL - UCL)**		

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYL1130										
Benzene	BYL1130-BS1	LCS	24.170	25.000	ug/L	96.7		70 - 130		
Toluene	BYL1130-BS1	LCS	24.890	25.000	ug/L	99.6		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BYL1130-BS1	LCS	10.240	10.000	ug/L	102		75 - 125		
Toluene-d8 (Surrogate)	BYL1130-BS1	LCS	9.8900	10.000	ug/L	98.9		80 - 120		
4-Bromofluorobenzene (Surrogate)	BYL1130-BS1	LCS	9.9900	10.000	ug/L	99.9		80 - 120		

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYL1130	Used client sample: N										
Benzene	MS	1528561-90	ND	25.000	25.000	ug/L		100		70 - 130	
	MSD	1528561-90	ND	23.410	25.000	ug/L	6.6	93.6	20	70 - 130	
Toluene	MS	1528561-90	ND	25.330	25.000	ug/L		101		70 - 130	
	MSD	1528561-90	ND	24.400	25.000	ug/L	3.7	97.6	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1528561-90	ND	10.440	10.000	ug/L		104		75 - 125	
	MSD	1528561-90	ND	10.020	10.000	ug/L	4.1	100		75 - 125	
Toluene-d8 (Surrogate)	MS	1528561-90	ND	9.9100	10.000	ug/L		99.1		80 - 120	
	MSD	1528561-90	ND	9.9400	10.000	ug/L	0.3	99.4		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	1528561-90	ND	10.000	10.000	ug/L		100		80 - 120	
	MSD	1528561-90	ND	10.030	10.000	ug/L	0.3	100		80 - 120	

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Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYL1097						
Benzene	BYL1097-BLK1	ND	mg/kg	0.0050		
1,2-Dibromoethane	BYL1097-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane	BYL1097-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BYL1097-BLK1	ND	mg/kg	0.0050		
Methyl t-butyl ether	BYL1097-BLK1	ND	mg/kg	0.0050		
Toluene	BYL1097-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BYL1097-BLK1	ND	mg/kg	0.010		
t-Amyl Methyl ether	BYL1097-BLK1	ND	mg/kg	0.0050		
t-Butyl alcohol	BYL1097-BLK1	ND	mg/kg	0.050		
Diisopropyl ether	BYL1097-BLK1	ND	mg/kg	0.0050		
Ethanol	BYL1097-BLK1	ND	mg/kg	1.0		
Ethyl t-butyl ether	BYL1097-BLK1	ND	mg/kg	0.0050		
Total Purgeable Petroleum Hydrocarbons	BYL1097-BLK1	ND	mg/kg	0.20		
1,2-Dichloroethane-d4 (Surrogate)	**BYL1097-BLK1**	**97.9**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**BYL1097-BLK1**	**99.0**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**BYL1097-BLK1**	**101**	%	**74 - 121 (LCL - UCL)**		

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Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYL1097										
Benzene	BYL1097-BS1	LCS	0.12265	0.12500	mg/kg	98.1		70 - 130		
Toluene	BYL1097-BS1	LCS	0.11687	0.12500	mg/kg	93.5		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BYL1097-BS1	LCS	0.049310	0.050000	mg/kg	98.6		70 - 121		
Toluene-d8 (Surrogate)	BYL1097-BS1	LCS	0.047890	0.050000	mg/kg	95.8		81 - 117		
4-Bromofluorobenzene (Surrogate)	BYL1097-BS1	LCS	0.052550	0.050000	mg/kg	105		74 - 121		

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Volatile Organic Analysis (EPA Method 8260B/5035)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYL1097	Used client sample: N										
Benzene	MS	1528561-65	ND	0.11532	0.12500	mg/kg		92.3		70 - 130	
	MSD	1528561-65	ND	0.11668	0.12500	mg/kg	1.2	93.3	20	70 - 130	
Toluene	MS	1528561-65	ND	0.11501	0.12500	mg/kg		92.0		70 - 130	
	MSD	1528561-65	ND	0.10976	0.12500	mg/kg	4.7	87.8	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1528561-65	ND	0.047640	0.050000	mg/kg		95.3		70 - 121	
	MSD	1528561-65	ND	0.047290	0.050000	mg/kg	0.7	94.6		70 - 121	
Toluene-d8 (Surrogate)	MS	1528561-65	ND	0.048750	0.050000	mg/kg		97.5		81 - 117	
	MSD	1528561-65	ND	0.048480	0.050000	mg/kg	0.6	97.0		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1528561-65	ND	0.052050	0.050000	mg/kg		104		74 - 121	
	MSD	1528561-65	ND	0.052180	0.050000	mg/kg	0.2	104		74 - 121	

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Notes And Definitions

MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.
S08	The internal standard on the sample was not within the control limits.
S09	The surrogate recovery on the sample for this compound was not within the control limits.
Z1	Sample was analysed three times and internal standards were low all three times.

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