

Ms. Karel Detterman, P.G.  
Hazardous Materials Specialist  
Alameda County Environmental Health (ACEH)  
1131 Harbor Bay Parkway  
Alameda, CA 94502

**RECEIVED**

By Alameda County Environmental Health 9:12 am, Nov 18, 2016

Subject:

**Second and Third Quarter 2016 Semi-Annual Groundwater  
Monitoring Report**

Former BP Station #11109  
4280 Foothill Boulevard, Oakland, California  
ACEH Case #RO0000426

Arcadis U.S., Inc.  
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Suite 300  
San Francisco, California 94104  
Tel 415.374.2744  
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ENVIRONMENT

Dear Ms. Detterman:

Arcadis U.S., Inc. (Arcadis) has prepared this *Second and Third Quarter 2016 Semi-Annual Groundwater Monitoring Report* to document the results of groundwater monitoring and sampling and remediation progress at the Former BP Service Station #11109 located at 4280 Foothill Boulevard in Oakland, Alameda County, California.

Date:  
November 16, 2016

Contact:  
Hollis Phillips

Phone:  
415.432.6903

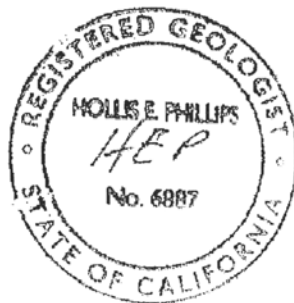
Email:  
Hollis.Phillips@arcadis.com

Our ref:  
GP09BPNA.C106.N0000

"I declare to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct."

Submitted by:

ARCADIS U.S., Inc.



Hollis E. Phillips, P.G. (No. 6887)  
Principal Geologist/Project Manager

Copies:

Ms. Karel Detterman, P.G., Alameda County Environmental Health (Submitted via ACEH ftp Site)  
Mr. Ed Ralston, ConocoPhillips, 76 Broadway, Sacramento, California 95818 (electronic copy via GeoTracker)

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## WORK PERFORMED DURING SECOND AND THIRD QUARTER 2016

- Submitted the *Fourth Quarter 2015 and First Quarter 2016 Semi-Annual Groundwater Monitoring Report*, dated September 30, 2016.
- Conducted the Third Quarter 2016 semi-annual groundwater monitoring event on September 29, 2016.

## WORK PROPOSED DURING FOURTH QUARTER 2016 AND FIRST QUARTER 2017

- Submit the *Second and Third Quarter 2016 Semi-Annual Groundwater Monitoring Report*, contained herein.
- Prepare a work plan for monitoring well destruction and decommissioning upon Site closure approval from Alameda County Environmental Health (ACEH).

## GROUNDWATER MONITORING/SAMPLING ACTIVITIES AND RESULTS

Third quarter 2016 groundwater monitoring was conducted on September 29, 2016 by Blaine Tech Services, Inc. (Blaine Tech) personnel. Groundwater monitoring was also conducted on September 29, 2016 at the adjacent Chevron #9-0076 (ACEH Case #RO0000427) to further characterize hydrogeology in the vicinity of the Site. Prior to groundwater sampling, depth-to-water (DTW) measurements were collected in wells MW-2 through MW-12 with an oil/water interface probe. Light non-aqueous phase liquid (LNAPL) and hydrocarbon odor was present in the monitoring wells MW-5, MW-10 and MW-12. Monitoring well MW-2 was noted as dry during well gauging activities. Monitoring well MW-8 was inaccessible and not gauged. The Hydrasleeves in MW-3, MW-4, MW-6, MW-7, and MW-11 were replaced.

Current Phase of Project:	Monitoring
Frequency of Monitoring/Sampling:	Semi-Annual (Q1 and Q3)
Is LNAPL Present On-site:	Yes
LNAPL Detected During the Third Quarter 2016 (thickness in feet):	MW-5 (0.07'), MW-10 (0.01') and MW-12 (0.03')
Approximate Depth to Groundwater (feet below top of casing):	Range: 12.17 (MW-10) to 19.36 (MW-4)
Groundwater Flow Direction:	Southwest

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Groundwater Flow Magnitude (feet/foot):

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0.05

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Agency Directive Requirements:

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None

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## LNAPL REMOVAL ACTIVITIES

LNAPL absorbent socks were first placed in monitoring wells MW-5, MW-10, and MW-12 on May 7, 2013 to remove residual LNAPL at each location, as discussed in the *Results of DPE Pilot Test and SPH Removal* summary letter. Following Third Quarter 2016 semiannual gauging and sampling activities, the absorbent socks were replaced. During the most recent monitoring event, MW-5, MW-10, and MW-12 were found to have LNAPL and a hydrocarbon odor.

## RECOMMENDATIONS

Arcadis recommends that a status of no further action be granted, and the site be granted regulatory closure. A work plan for monitoring well destruction and decommissioning will be prepared following the case closure evaluation process and upon site approval from ACEH. Arcadis recommends suspending groundwater monitoring and reporting during the case closure evaluation process.

## LIMITATIONS

The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by ESC Lab Sciences, and our understanding of ACEH requirements. Our services were performed in accordance with the generally accepted standard of practice at the time this report was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of Arcadis and Atlantic Richfield Company. It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

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## ENCLOSURES

### Tables

- 1 Current Groundwater Monitoring Data
- 2 Historical Groundwater Monitoring Data
- 3 Historical Groundwater Flow Direction and Gradient

### Figures

- 1 Site Location Map
- 2 Groundwater Elevation Contour Map – September 29, 2016
- 3 Analytical Summary Map – September 29, 2016

### Attachments

- 1 Field Methods
- 2 Field Data Sheets
- 3 Laboratory Report and Chain-of-Custody Documentation

# TABLES



Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-2	9/29/2016		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(j,l)
MW-3	9/29/2016		42.92	13.57	--	29.35	--	--	--	--	--	1.41	--	--	--	--	--	--	--	--	0.42	(n)
MW-4	9/29/2016		42.88	19.36	--	23.52	1,300	--	--	--	--	14.6	--	--	--	--	--	--	--	--	0.89	(n)
MW-5	9/29/2016		39.14	12.65	0.07	26.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,i)
MW-6	9/29/2016		44.37	19.12	--	25.25	--	--	--	--	--	1.93	--	--	--	--	--	--	--	--	0.81	(n)
MW-7	9/29/2016		43.10	13.81	--	29.29	1,400	3.78	<5.00	0.768 (J)	1.43 (J)	3.18	7.41	<1.00	<1.00	<1.00	<100	<1.00	<1.00	1.41	(n)	
MW-8	9/29/2016		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(q,l)
MW-9	9/29/2016		44.06	13.74	--	30.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-10	9/29/2016		39.78	12.17	0.01	27.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,i)
MW-11	9/29/2016		40.04	12.43	--	27.61	9,380	244 (J3)	73 (J, J3)	173 (J3)	319 (J3)	<20 (J3)	<100	<20 (J3)	<20	<20	<2,000	<20 (J3)	<20 (J3)	0.74	(n)	
MW-12	9/29/2016		40.32	12.53	0.03	27.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,i)

**Notes:**

- B = Benzene
- 1,2-DCA = 1,2-Dichloroethane
- DIPE = Di-isopropyl ether
- DO = Dissolved oxygen
- DRO = Diesel range organics, range C10-C28
- DTW = Depth to water in ft btoc
- E = Ethylbenzene
- EDB = 1,2-Dibromomethane
- ETBE = Ethyl tert butyl ether
- GRO = Gasoline range organics, range C6-C12
- GW Elev = Groundwater measured in ft msl
- LNAPL = Light non-aqueous phase liquid
- MTBE = Methyl tert butyl ether
- T = Toluene
- TAME = Tert-amyl methyl ether
- TBA = Tert-butyl alcohol
- TOC = Top of casing measured in ft (surveyed)
- X = Xylenes, total
- µg/L = Micrograms per liter
- mg/L = Milligrams per liter
- ft = feet
- ft btoc = feet below top of casing
- ft msl = feet relative to mean sea level
- Dup = Duplicate sample
- SHEEN = Sheen detected in well
- = Not analyzed/applicable/measured/ available
- < = Not detected at or above reported detection limit
- J = Estimated value between the reporting limit and method detection limit
- J3 = The associated batch QC was outside the established quality control range for precision
- (a) Sample exceeded EPA recommended holding time
- (b) Sheen in well
- (c) Well not sampled due to damage during site construction
- (d) Insufficient water to sample

- (e) Blind duplicate
  - (f) TOC lowered
  - (g) Free product in well
  - (h) Trip Blank
  - (i) Hydrocarbon odor observed at wellhead
  - (j) Well is dry
  - (k) GWE adjusted assuming specific gravity of 0.75 for free product
  - (l) Well not sampled in accordance with groundwater sampling schedule
  - (m) SoakEase present in well, but no NAPL. Replaced SoakEase and no sample collection.
  - (n) Replaced hydrosleeve
  - (o) No hydrosleeve upon arrival, deployed new hydrosleeve to collect sample, no hydrosleeve replaced
  - (p) Replaced SPH sock
  - (q) Well was inaccessible
- (\*) Laboratory control sample and/ or laboratory control sample duplicate exceeds the control limits
1. Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported.
  2. Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12.
  3. GRO analysis was completed by EPA method 8260B (C4-C12) for samples collected from the time period April 2006 through February 4, 2008. The analysis for GRO was changed to EPA method 8015B (C6-C12) for samples collected from the time period February 5, 2008 through the present.
  4. The data within this table collected prior to April 2006 was provided to ARCADIS U.S., Inc. by Atlantic Richfield Company and their previous consultants. ARCADIS U.S., Inc. has not verified the accuracy of this information.

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes
B-1	6/19/2015		--	--	--	--	<100	<1.0	<5.0	<1.0	<3.0	3.1	--	--	--	--	--	--	--	--	--
B-6	6/19/2015		--	--	--	--	<100	<1.0	<5.0	<1.0	<3.0	0.43 (J)	--	--	--	--	--	--	--	--	--
B-7	6/22/2015		--	--	--	--	<100	<1.0	<5.0	<1.0	<3.0	6.2	--	--	--	--	--	--	--	--	--
C-1	3/13/2014		38.09	12.13	--	25.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-2	3/13/2014		37.45	12.45	--	25.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-3	3/13/2014		38.00	19.00	--	19.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-4	3/13/2014		36.09	9.97	--	26.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-5	3/13/2014		38.48	20.26	--	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-6	3/13/2014		35.36	21.10	--	14.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-7	3/13/2014		35.15	24.90	--	10.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-8	3/13/2014		34.66	25.01	--	9.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-9	3/13/2014		33.64	24.82	--	8.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-10	3/13/2014		38.36	9.10	--	29.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DPE-1	7/17/2012		--	--	--	--	28,000	380	400	880	3,000	<50	<400	<50	<50	<50	<25,000	--	--	--	--
MW-1	1/31/1990		38.19	15.41	--	22.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	9/16/2010		--	--	--	--	5,500	400	250	320	410	11	<20	<2.5	<2.5	<2.5	<500	<2.5	<2.5	--	--
MW-2	2/5/1990		41.22	21.90	--	19.32	1,300	14	<0.1	9	13	--	--	--	--	--	--	--	--	--	--
MW-2	2/14/1991		41.22	21.16	--	20.06	<50	<0.3	<0.3	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--
MW-2	5/13/1991		41.22	21.32	--	19.90	<50	<0.3	<0.3	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--
MW-2	7/24/1991		41.22	22.92	--	18.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	10/3/1991		41.22	24.90	--	16.32	<50	<0.3	0.8	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--
MW-2	10/15/1991		41.22	24.10	--	17.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	12/16/1991		41.22	23.95	--	17.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	1/6/1992		41.22	23.30	--	17.92	<50	<0.3	<0.3	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--
MW-2	1/22/1992		41.22	23.14	--	18.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	1/28/1992		41.22	22.99	--	18.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	2/5/1992		41.22	22.63	--	18.59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	2/12/1992		41.22	22.04	--	19.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	2/17/1992		41.22	20.84	--	20.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	4/3/1992		41.22	18.29	--	22.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	4/8/1992		41.22	18.86	--	22.36	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--
MW-2	4/14/1992		41.22	19.45	--	21.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	4/29/1992		41.22	20.35	--	20.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	5/7/1992		41.22	20.84	--	20.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	7/3/1992		41.22	22.34	--	18.88	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--
MW-2	10/8/1992		41.22	23.73	--	17.49	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--
MW-2	12/31/1992		41.22	21.12	--	20.10	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--
MW-2	4/21/1993		41.22	17.68	--	23.54	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(a)
MW-2	7/7/1993		41.22	20.30	--	20.92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--
MW-2	9/21/1993		41.22	21.93	--	19.29	<50	0.9	0.7	0.7	2.6	21.54	--	--	--	--	--	--	--	--	--
MW-2	12/17/1993		41.22	21.48	--	19.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



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MW-2	12/23/1993		--	--	--	--	<50	<0.5	<0.5	<0.5	0.7	--	--	--	--	--	--	--	--	--	--
MW-2	4/7/1994		41.22	20.25	--	20.97	<50	<0.5	<0.5	<0.5	<0.5	12.2	--	--	--	--	--	--	--	5.90	
MW-2	7/6/1994		41.22	20.59	--	20.63	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	3.10	
MW-2	10/7/1994		41.22	22.04	--	19.18	<50	<0.5	<0.5	<0.5	<0.5	15.2	--	--	--	--	--	--	--	2.80	
MW-2	1/27/1995		41.22	26.12	--	15.10	<50	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--	--	4.80	
MW-2	3/30/1995		41.22	12.34	--	28.88	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	7.20	
MW-2	6/20/1995		41.22	16.42	--	24.80	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	6.00	
MW-2	10/3/1995		41.22	20.06	--	21.16	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	--	--	--	--	--	5.70	
MW-2	12/6/1995		41.22	21.31	--	19.91	<50	<0.50	<0.50	<0.50	<1.0	46	--	--	--	--	--	--	--	5.40	
MW-2	3/21/1996		41.22	12.28	--	28.94	<50	<0.5	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	7.40	
MW-2	6/21/1996		41.22	13.28	--	27.94	<50	<0.5	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	7.30	
MW-2	9/6/1996		41.22	13.94	--	27.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	9/9/1996		--	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	7.40	
MW-2	12/19/1996		41.22	12.19	--	29.03	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	7.90	
MW-2	3/17/1997		41.22	11.59	--	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	8/12/1997		41.22	13.21	--	28.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	12/10/1997		41.22	12.34	--	28.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/12/1998		41.22	11.04	--	30.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	6/23/1998		41.22	11.77	--	29.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/31/1999		41.22	12.38	--	28.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	8/25/1999		41.22	17.72	--	23.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/9/2000		41.22	11.94	--	29.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/8/2001		41.22	10.31	--	30.91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/8/2002		41.22	14.35	--	26.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/18/2002		41.22	13.11	--	28.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/11/2003		41.22	13.24	--	27.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	12/9/2003		41.22	18.58	--	22.64	350	<0.50	<0.50	0.56	2.8	24	<20	<0.50	<0.50	<0.50	<100	--	--	--	(b)
MW-2	3/9/2004		41.22	12.52	--	28.70	74	<0.50	<0.50	0.83	4.7	27	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--	
MW-2	9/17/2004		41.22	18.05	--	23.17	59	<0.50	<0.50	<0.50	<0.50	21	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--	
MW-2	3/7/2005		41.22	2.32	--	38.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(c)
MW-2	9/5/2006		41.22	10.46	--	30.76	79	<0.50	5.1	<0.50	0.73	<0.50	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--	
MW-2	3/5/2007		41.22	12.25	--	28.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(c)
MW-2	3/6/2008		41.22	12.33	--	28.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(d)
MW-2	9/5/2012		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	3/20/2013		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	9/20/2013		41.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(j)
MW-2	3/13/2014		41.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(j)
MW-2	9/25/2014		41.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(i, j)
MW-2	3/10/2015		41.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(j)
MW-2	9/21/2015		41.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(j,i)
MW-2	3/29/2016		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-2	9/29/2016		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(j,i)
MW-3	2/5/1990		40.74	17.45	--	23.29	1,400	15	<2.5	11	8	--	--	--	--	--	--	--	--	--	
MW-3	2/14/1991		40.74	18.52	--	22.22	320	8	<0.3	8	1	--	--	--	--	--	--	--	--	--	
MW-3	5/13/1991		40.74	19.32	--	21.42	640	13	<0.3	18	1	--	--	--	--	--	--	--	--	--	
MW-3	7/24/1991		40.74	20.69	--	20.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	10/3/1991		40.74	19.47	--	21.27	940	21	<0.3	23	2.1	--	--	--	--	--	--	--	--	--	
MW-3	10/15/1991		40.74	20.46	--	20.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	12/4/1991		40.74	18.29	--	22.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	12/16/1991		40.74	18.34	--	22.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	1/6/1992		40.74	18.50	--	22.24	580	6.1	1	6.1	7.1	--	--	--	--	--	--	--	--	--	
MW-3	1/22/1992		40.74	17.86	--	22.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	1/28/1992		40.74	15.84	--	24.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	2/5/1992		40.74	17.53	--	23.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	2/12/1992		40.74	17.15	--	23.59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2  
Historical Groundwater Monitoring Data  
CA-11109  
4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-3	2/17/1992		40.74	16.18	--	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	4/3/1992		40.74	14.80	--	25.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	4/8/1992		40.74	17.06	--	23.68	1,100	30	4.6	32	11	--	--	--	--	--	--	--	--	--	--	
MW-3	4/14/1992		40.74	15.22	--	25.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	4/29/1992		40.74	15.90	--	24.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	5/7/1992		40.74	16.35	--	24.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	7/3/1992		40.74	17.74	--	23.00	1,200	38	<2.5	24	<2.5	--	--	--	--	--	--	--	--	--	--	
MW-3	10/8/1992		40.74	19.06	--	21.68	1,400	31	<0.5	25	13	--	--	--	--	--	--	--	--	--	--	
MW-3	12/31/1992		40.74	16.61	--	24.13	820	12	4.1	13	5.9	--	--	--	--	--	--	--	--	--	--	
MW-3	12/31/1992	Dup	40.74	16.61	--	24.13	960	11	3.6	10	3.8	--	--	--	--	--	--	--	--	--	--	(e)
MW-3	4/21/1993		40.74	14.24	--	26.50	420	5.6	<0.5	3.9	1.4	--	--	--	--	--	--	--	--	--	--	
MW-3	4/21/1993	Dup	40.74	14.24	--	26.50	390	5	<0.5	3.7	1.5	--	--	--	--	--	--	--	--	--	--	(e)
MW-3	7/7/1993		40.13	15.19	--	24.94	54	0.6	0.6	<0.5	<0.5	12.68	--	--	--	--	--	--	--	--	--	(f)
MW-3	9/21/1993		40.13	16.58	--	23.55	540	7.9	0.9	4.7	2.4	--	--	--	--	--	--	--	--	--	--	
MW-3	12/17/1993		40.13	15.82	--	24.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	12/23/1993		--	--	--	--	500	9.8	1.5	3.3	2.1	--	--	--	--	--	--	--	--	--	--	
MW-3	12/23/1993	Dup	--	--	--	--	480	9.2	<0.5	5.4	5.3	--	--	--	--	--	--	--	--	--	--	(e)
MW-3	4/7/1994		40.13	28.50	--	11.63	460	20	7.4	8.9	11	18.2	--	--	--	--	--	--	--	--	--	
MW-3	4/7/1994	Dup	40.13	28.50	--	11.63	460	20	7.7	9	11	--	--	--	--	--	--	--	--	--	--	(e)
MW-3	7/6/1994		--	--	--	--	300	10	0.6	1.7	6.4	5.54	--	--	--	--	--	--	--	--	4.80	
MW-3	10/7/1994		40.13	27.65	--	12.48	620	28	<0.5	2.2	12	31.4	--	--	--	--	--	--	--	--	4.40	
MW-3	1/27/1995		40.13	27.65	--	12.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/30/1995		40.13	26.05	--	14.08	300	10	6	3.4	18	--	--	--	--	--	--	--	--	--	7.60	
MW-3	6/20/1995		40.13	19.49	--	20.64	170	7.2	3.4	0.85	15	--	--	--	--	--	--	--	--	--	--	
MW-3	10/3/1995		40.13	24.93	--	15.20	170	2.1	<0.50	0.81	8	6.7	--	--	--	--	--	--	--	--	--	
MW-3	12/6/1995		40.13	25.14	--	14.99	1,700	6.7	3.1	2.8	210	64	--	--	--	--	--	--	--	--	--	
MW-3	12/6/1995	Dup	40.13	25.14	--	14.99	1,400	6.1	3	1.7	190	53	--	--	--	--	--	--	--	--	--	(e)
MW-3	3/21/1996		40.13	9.48	--	30.65	<50	0.5	<1.0	<1.0	1	<10	--	--	--	--	--	--	--	--	7.30	
MW-3	6/21/1996		40.13	11.60	--	28.53	<50	13	<1.0	<1.0	<1.0	12	--	--	--	--	--	--	--	--	7.60	
MW-3	9/6/1996		40.13	12.23	--	27.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	9/9/1996		--	--	--	--	<250	6.5	<5.0	<5.0	<5.0	<50	--	--	--	--	--	--	--	--	7.60	
MW-3	12/19/1996		40.13	10.46	--	29.67	<50	4.1	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	8.40	
MW-3	3/17/1997		40.13	9.86	--	30.27	50	<5.0	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.40	
MW-3	8/12/1997		40.13	12.11	--	28.02	<50	0.79	<1.0	<1.0	<1.0	10	--	--	--	--	--	--	--	--	6.10	
MW-3	12/10/1997		40.13	10.90	--	29.23	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	3.20	
MW-3	3/12/1998		40.13	10.20	--	29.93	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	6.30	
MW-3	3/12/1998	Dup	40.13	10.20	--	29.93	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	--	(e)
MW-3	6/23/1998		40.13	10.17	--	29.96	50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	3.40	
MW-3	3/31/1999		40.13	11.45	--	28.68	60	<1.0	<1.0	<1.0	<1.0	6.2	--	--	--	--	--	--	--	--	--	
MW-3	8/25/1999		40.13	12.52	--	27.61	<50	<1.0	<1.0	<1.0	<1.0	7.7	--	--	--	--	--	--	--	--	--	
MW-3	3/9/2000		40.13	12.39	--	27.74	<50	<0.5	0.54	<0.5	1.7	6.3	--	--	--	--	--	--	--	--	--	
MW-3	3/8/2001		40.13	10.41	--	29.72	<50	<0.5	<0.5	<0.5	0.59	7.7	--	--	--	--	--	--	--	--	--	
MW-3	3/8/2002		40.13	9.83	--	30.30	62	<0.5	<0.5	<0.5	<1.0	11.6	--	--	--	--	--	--	--	--	--	
MW-3	3/18/2002		40.13	9.20	--	30.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/11/2003		40.13	10.54	--	29.59	<50	<0.50	<0.50	<0.50	<0.50	6.7	--	--	--	--	--	--	--	--	--	
MW-3	12/9/2003		40.13	12.88	--	27.25	<50	<0.50	<0.50	<0.50	<0.50	6.4	<20	<0.50	<0.50	<0.50	<100	--	--	--		
MW-3	3/9/2004		40.13	9.49	--	30.64	<50	<0.50	<0.50	<0.50	0.63	6.9	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-3	9/17/2004		40.13	12.76	--	27.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/7/2005		40.13	7.30	--	32.83	<50	<0.50	<0.50	<0.50	0.52	5.1	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-3	9/6/2005		42.92	10.81	--	32.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/6/2006		42.92	8.85	--	34.07	<50	<0.50	<0.50	<0.50	<0.50	6.9	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--		
MW-3	9/5/2006		42.92	9.86	--	33.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/5/2007		42.92	8.33	--	34.59	<50	<0.50	<0.50	<0.50	<0.50	5.4	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	2.31		
MW-3	9/7/2007		42.92	11.10	--	31.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/6/2008		42.92	8.92	--	34.00	<50	<0.50	<0.50	<0.50	<0.50	4.2	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	2.50		
MW-3	9/3/2008		42.92	12.19	--	30.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-3	3/4/2009		42.92	8.28	--	34.64	<50	<0.50	<0.50	<0.50	<0.50	4.9	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	1.19		
MW-3	9/30/2009		42.92	11.60	--	31.32	<50	<0.50	<0.50	<0.50	<0.50	6.8	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--		
MW-3	10/28/2009		42.92	10.40	--	32.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	3/23/2010		42.92	8.27	--	34.65	<50	<0.50	<0.50	<0.50	<1.0	3.2	<4.0	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-3	6/10/2010		42.92	9.40	--	33.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	9/16/2010		42.92	11.14	--	31.78	<50	<0.50	<0.50	<0.50	<1.0	5.9	<4.0	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-3	2/23/2011		42.92	8.71	--	34.21	--	--	--	--	--	0.58	--	--	--	--	--	--	--	--	--	
MW-3	9/28/2011		42.92	11.14	--	31.78	--	--	--	--	--	3.2	--	--	--	--	--	--	--	--	--	
MW-3	3/8/2012		42.92	11.01	--	31.91	--	--	--	--	--	<0.50 (*)	--	--	--	--	--	--	--	--	--	
MW-3	9/5/2012		42.92	11.42	--	31.50	--	--	--	--	--	6.5	--	--	--	--	--	--	--	--	--	
MW-3	3/20/2013		42.92	10.30	--	32.62	--	--	--	--	--	2.6	--	--	--	--	--	--	--	--	--	
MW-3	9/20/2013		42.92	11.40	--	31.52	--	--	--	--	--	4.1	--	--	--	--	--	--	--	--	4.66	
MW-3	3/13/2014		42.92	10.73	--	32.19	--	--	--	--	--	4.2	--	--	--	--	--	--	--	--	--	
MW-3	9/25/2014		42.92	12.06	--	30.86	--	--	--	--	--	5.5	--	--	--	--	--	--	--	--	2.33	
MW-3	3/10/2015		42.92	10.16	--	32.76	--	--	--	--	--	4.0	--	--	--	--	--	--	--	--	2.43	
MW-3	9/21/2015		42.92	13.17	--	29.75	--	--	--	--	--	3.49	--	--	--	--	--	--	--	--	1.75	
MW-3	3/29/2016		42.92	8.15	--	34.77	--	--	--	--	--	1.52	--	--	--	--	--	--	--	--	0.56	(i,n)
MW-3	9/29/2016		42.92	13.57	--	29.35	--	--	--	--	--	1.41	--	--	--	--	--	--	--	--	0.42	(n)
MW-4	2/5/1990		40.11	20.75	--	19.36	620	<0.5	9	<0.5	10	--	--	--	--	--	--	--	--	--	--	
MW-4	2/14/1991		40.11	21.73	--	18.38	180	<0.3	<0.3	0.4	2	--	--	--	--	--	--	--	--	--	--	
MW-4	5/13/1991		40.11	18.55	--	21.56	72	0.7	<0.3	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--	
MW-4	7/24/1991		40.11	21.31	--	18.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	10/3/1991		40.11	22.57	--	17.54	57	<0.3	<0.3	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--	
MW-4	10/15/1991		40.11	22.88	--	17.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	12/4/1991		40.11	22.54	--	17.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	12/16/1991		40.11	22.59	--	17.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	1/6/1992		40.11	22.00	--	18.11	480	0.8	3.2	1.9	7.7	--	--	--	--	--	--	--	--	--	--	
MW-4	1/22/1992		40.11	21.58	--	18.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	1/28/1992		40.11	21.42	--	18.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	2/5/1992		40.11	21.10	--	19.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	2/12/1992		40.11	20.74	--	19.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	2/17/1992		40.11	19.78	--	20.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	4/3/1992		40.11	16.80	--	23.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	4/8/1992		40.11	17.13	--	22.98	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-4	4/14/1992		40.11	17.74	--	22.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	4/29/1992		40.11	18.56	--	21.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	5/7/1992		40.11	19.10	--	21.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	7/3/1992		40.11	20.71	--	19.40	<50	0.6	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-4	10/8/1992		40.11	22.43	--	17.68	270	<0.5	2.1	2.5	3.2	--	--	--	--	--	--	--	--	--	--	
MW-4	12/31/1992		40.11	19.58	--	20.53	150	<0.5	<0.5	<0.5	1.3	--	--	--	--	--	--	--	--	--	--	
MW-4	4/21/1993		40.11	17.79	--	22.32	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-4	7/7/1993		40.11	18.44	--	21.67	160	1.2	5.4	3.8	19	5.51	--	--	--	--	--	--	--	--	--	
MW-4	9/21/1993		40.11	20.14	--	19.97	71	<0.5	1.9	<0.5	2.1	--	--	--	--	--	--	--	--	--	--	
MW-4	12/17/1993		40.11	19.80	--	20.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	12/23/1993		--	--	--	--	<50	3.1	1.6	0.8	3.8	5.7	--	--	--	--	--	--	--	--	--	
MW-4	4/7/1994		40.11	19.12	--	20.99	<50	<0.5	<0.5	<0.5	<0.5	11.7	--	--	--	--	--	--	--	--	6.60	
MW-4	7/6/1994		40.11	19.90	--	20.21	62	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	4.10	
MW-4	10/7/1994		40.11	20.07	--	20.04	<50	<0.5	<0.5	<0.5	<0.5	7.38	--	--	--	--	--	--	--	--	3.60	
MW-4	1/27/1995		40.11	13.72	--	26.39	<50	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--	--	--	2.70	
MW-4	3/30/1995		40.11	11.46	--	28.65	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	8.30	
MW-4	6/20/1995		40.11	14.78	--	25.33	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	--	
MW-4	10/3/1995		40.11	19.62	--	20.49	<50	<0.50	<0.50	<0.50	<1.0	5	--	--	--	--	--	--	--	--	5.80	
MW-4	12/6/1995		40.11	19.91	--	20.20	<50	<0.50	<0.50	<0.50	<1.0	47	--	--	--	--	--	--	--	--	5.70	
MW-4	3/21/1996		40.11	11.12	--	28.99	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.80	
MW-4	6/21/1996		40.11	12.21	--	27.90	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.90	

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-4	9/6/1996		40.11	12.89	--	27.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	9/9/1996		--	--	--	--	--	<50	<0.5	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.20	
MW-4	12/19/1996		40.11	11.01	--	29.10	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	8.40	
MW-4	3/17/1997		40.11	10.42	--	29.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	8/12/1997		40.11	12.77	--	27.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	12/10/1997		40.11	11.22	--	28.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/12/1998		40.11	10.81	--	29.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	6/23/1998		40.11	10.61	--	29.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/31/1999		40.11	11.46	--	28.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	8/25/1999		40.11	16.16	--	23.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/9/2000		40.11	12.23	--	27.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/8/2001		40.11	11.04	--	29.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/8/2002		40.11	12.73	--	27.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/18/2002		40.11	11.62	--	28.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/11/2003		40.11	13.44	--	26.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	12/9/2003		40.11	15.03	--	25.08	<250	<2.5	<2.5	<2.5	<2.5	130	<100	<2.5	<2.5	2.7	<500	--	--	--		
MW-4	3/9/2004		40.11	11.04	--	29.07	<50	<0.50	<0.50	<0.50	<0.50	35	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-4	9/17/2004		40.11	16.75	--	23.36	<250	<2.5	<2.5	<2.5	<2.5	140	<100	<2.5	<2.5	2.6	<500	<2.5	<2.5	--		
MW-4	3/7/2005		40.11	11.02	--	29.09	67	<0.50	<0.50	<0.50	<0.50	42	<20	<0.50	<0.50	0.56	<100	<0.50	<0.50	--		
MW-4	9/6/2005		42.88	14.64	--	28.24	81	<0.50	<0.50	<0.50	<1.5	180	<10	<0.50	<0.50	2.8	<150	<0.50	<0.50	--		
MW-4	3/6/2006		42.88	12.42	--	30.46	<100	<1.0	<1.0	<1.0	<1.0	110	<40	<1.0	<1.0	1.4	<600	<1.0	<1.0	--		
MW-4	9/5/2006		42.88	13.81	--	29.07	130	<1.0	<1.0	<1.0	<1.0	190	<40	<1.0	<1.0	1.7	<600	<1.0	<1.0	--		
MW-4	3/5/2007		42.88	10.63	--	32.25	<50	<0.50	<0.50	<0.50	<0.50	13	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	3.34		
MW-4	9/7/2007		42.88	14.77	--	28.11	90	<0.50	<0.50	<0.50	<0.50	130	<20	<0.50	<0.50	1.7	<300	<0.50	<0.50	1.14		
MW-4	3/6/2008		42.88	11.30	--	31.58	<50	<0.50	<0.50	<0.50	<0.50	170	14	<0.50	<0.50	2.1	<300	<0.50	<0.50	1.76		
MW-4	9/3/2008		42.88	16.11	--	26.77	<50	<5.0	<5.0	<5.0	<5.0	150	<100	<5.0	<5.0	<5.0	<3,000	<5.0	<5.0	1.97		
MW-4	3/4/2009		42.88	10.78	--	32.10	140	<5.0	<5.0	<5.0	<5.0	110	<100	<5.0	<5.0	<5.0	<3,000	<5.0	<5.0	1.31		
MW-4	9/30/2009		42.88	16.48	--	26.40	240	<2.0	<2.0	<2.0	<2.0	140	<40	<2.0	<2.0	<2.0	<1,200	<2.0	<2.0	0.08		
MW-4	10/28/2009		42.88	15.07	--	27.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	3/23/2010		42.88	10.82	--	32.06	<50	<0.50	<0.50	<0.50	<1.0	84	18	<0.50	<0.50	0.88	<100	<0.50	<0.50	--		
MW-4	6/10/2010		42.88	12.67	--	30.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-4	9/16/2010		42.88	15.72	--	27.16	120	<0.50	<0.50	<0.50	<1.0	72	8	<0.50	<0.50	0.82	<100	<0.50	<0.50	--		
MW-4	2/23/2011		42.88	11.43	--	31.45	<50	--	--	--	--	55	--	--	--	--	--	--	--	--	--	
MW-4	9/28/2011		42.88	15.34	--	27.54	150	--	--	--	--	62	--	--	--	--	--	--	--	--	--	
MW-4	3/8/2012		42.88	15.03	--	27.85	120	--	--	--	--	42	--	--	--	--	--	--	--	--	--	
MW-4	9/5/2012		42.88	15.90	--	26.98	56	<0.50	<0.50	<0.50	<1.0	47	18	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--		
MW-4	3/20/2013		42.88	13.80	--	29.08	<50	--	--	--	--	17	--	--	--	--	--	--	--	--	--	
MW-4	9/20/2013		42.88	15.69	--	27.19	830	--	--	--	--	21	--	--	--	--	--	--	--	--	4.41	
MW-4	3/13/2014		42.88	15.59	--	27.29	<50	--	--	--	--	19	--	--	--	--	--	--	--	--	--	
MW-4	9/25/2014		42.88	17.10	--	25.78	190	--	--	--	--	17	--	--	--	--	--	--	--	--	2.06	(i)
MW-4	3/10/2015		42.88	14.36	--	28.52	90	--	--	--	--	17	--	--	--	--	--	--	--	--	1.87	
MW-4	9/21/2015		42.88	18.45	--	24.43	953	--	--	--	--	17.8	--	--	--	--	--	--	--	--	1.89	
MW-4	3/29/2016		42.88	11.30	--	31.58	<100	--	--	--	--	10.9	--	--	--	--	--	--	--	--	1.30	(i,n)
MW-4	9/29/2016		42.88	19.36	--	23.52	1,300	--	--	--	--	14.6	--	--	--	--	--	--	--	--	0.89	(n)
MW-5	10/3/1991		39.55	18.08	--	21.47	79,000	13,000	7,400	1,400	6,200	--	--	--	--	--	--	--	--	--	--	
MW-5	10/15/1991		39.55	18.55	--	21.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	12/4/1991		39.55	18.44	0.13	20.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	12/16/1991		39.55	18.66	0.01	20.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	1/6/1992		39.55	19.12	0.11	20.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	1/22/1992		39.55	14.59	--	24.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	1/28/1992		39.55	15.25	--	24.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	2/5/1992		39.55	15.58	--	23.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-5	2/12/1992		39.55	15.54	0.01	24.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	2/17/1992		39.55	13.98	--	25.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-5	4/3/1992		39.55	13.63	0.04	25.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-5	4/8/1992		39.55	13.17	0.01	26.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	4/14/1992		39.55	13.45	0.01	26.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	4/29/1992		39.55	13.75	0.07	25.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	5/7/1992		39.55	16.15	0.04	23.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	7/3/1992		39.55	17.67	0.08	21.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/1/1992		39.55	17.83	0.50	21.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	10/8/1992		39.55	17.86	0.92	20.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	12/31/1992		39.55	15.20	--	24.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	4/21/1993		39.55	12.64	0.02	26.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	7/7/1993		39.14	12.68	0.82	25.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,f)
MW-5	9/21/1993		39.14	14.35	--	24.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-5	12/17/1993		39.14	12.61	0.41	26.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	4/7/1994		39.14	30.00	--	9.14	66,000	3,000	1,700	250	6,800	2,002	--	--	--	--	--	--	--	--	--	
MW-5	7/6/1994		--	--	--	--	29,000	1,900	330	63	2,700	1,141	--	--	--	--	--	--	--	--	--	
MW-5	10/7/1994		39.14	28.70	--	10.44	250,000	2,600	660	830	5,200	37.7	--	--	--	--	--	--	--	4.20	--	
MW-5	10/7/1994	Dup	39.14	28.70	--	10.44	45,000	2,900	540	260	2,600	--	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	1/27/1995		39.14	28.70	--	10.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	3/30/1995		39.14	28.95	--	10.19	50,000	7,900	2,600	520	6,400	--	--	--	--	--	--	--	--	--	5.50	
MW-5	3/30/1995	Dup	39.14	28.95	--	10.19	43,000	7,900	2,500	440	6,200	--	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	6/20/1995		39.14	22.54	--	16.60	34,000	5,100	1,900	300	3,700	--	--	--	--	--	--	--	--	--	--	
MW-5	6/20/1995	Dup	39.14	22.54	--	16.60	26,000	3,500	290	<25	3,300	--	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	10/3/1995		39.14	18.84	--	20.30	12,000	68	42	11	1,600	330	--	--	--	--	--	--	--	--	--	
MW-5	10/3/1995	Dup	39.14	18.84	--	20.30	12,000	46	39	10	1,600	320	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	12/6/1995		39.14	19.07	--	20.07	16,000	1,200	93	51	700	600	--	--	--	--	--	--	--	--	--	
MW-5	3/21/1996		39.14	7.43	--	31.71	1,500	89	28	6	250	<10	--	--	--	--	--	--	--	7.20	--	
MW-5	3/21/1996	Dup	39.14	7.43	--	31.71	1,900	92	30	7	270	<10	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	6/21/1996		39.14	9.87	--	29.27	3,500	740	150	19	400	<100	--	--	--	--	--	--	--	7.10	--	
MW-5	6/21/1996	Dup	39.14	9.87	--	29.27	2,700	680	140	20	400	<50	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	9/6/1996		39.14	10.52	--	28.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	9/9/1996		--	--	--	--	82,000	3,100	1,700	850	9,100	<2,500	--	--	--	--	--	--	--	7.50	--	
MW-5	9/9/1996	Dup	--	--	--	--	90,000	2,900	1,600	670	6,900	<2,500	--	--	--	--	--	--	--	--	--	(Dup)
MW-5	12/19/1996		39.14	8.62	--	30.52	41,000	790	820	120	2,040	<500	--	--	--	--	--	--	--	7.70	--	
MW-5	12/19/1996	Dup	39.14	8.62	--	30.52	26,000	490	430	63	1,140	<500	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	3/17/1997		39.14	8.22	--	30.92	5,500	1.9	2.4	<1.0	<1.0	29	--	--	--	--	--	--	--	6.40	--	
MW-5	3/17/1997	Dup	39.14	8.22	--	30.92	6,600	2.5	2.7	<1.0	<1.0	28	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	8/12/1997		39.14	12.18	0.22	26.74	33,000	6,400	2,400	680	4,400	<1,000	--	--	--	--	--	--	--	6.80	--	(g)
MW-5	8/12/1997	Dup	39.14	12.18	0.22	26.74	36,000	6,100	2,500	720	4,500	<500	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	12/10/1997		39.14	10.78	0.06	28.30	31,000	3,000	2,500	560	5,100	500	--	--	--	--	--	--	--	1.80	--	(g)
MW-5	12/10/1997	Dup	39.14	10.78	0.06	28.30	37,000	2,900	2,500	440	4,800	--	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	3/12/1998		39.14	10.11	0.22	28.81	100,000	1,600	870	250	2,600	<250	--	--	--	--	--	--	--	6.10	--	(g)
MW-5	6/23/1998		39.14	10.20	0.02	28.92	27,000	2,500	840	370	2,900	<250	--	--	--	--	--	--	--	2.10	--	
MW-5	6/23/1998	Dup	39.14	10.20	0.02	28.92	27,000	2,600	840	400	2,950	<500	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-5	8/25/1999		39.14	14.69	0.38	24.07	180,000	2,700	400	830	2,800	26	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/9/2000		39.14	14.83	0.60	23.71	53,000	12,000	2,600	1,900	9,100	<5.0	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/8/2002		39.14	11.45	1.50	26.19	33,000	8,240	1,080	1,010	2,900	34.3	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/18/2002		39.14	8.03	--	31.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	3/11/2003		39.14	9.60	0.45	29.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	12/9/2003		39.14	11.44	0.03	27.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/9/2004		39.14	7.91	--	31.23	31,000	3,900	1,100	780	3,600	<50	<2,000	<50	<50	<50	<10,000	96	<50	--		
MW-5	9/17/2004		39.14	12.13	0.15	27.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/7/2005		39.14	8.62	0.02	30.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/6/2005		39.14	11.16	0.18	27.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/6/2006		39.14	8.60	--	30.54	32,000	7,500	810	1,200	2,300	<50	<2,000	60	<50	<50	<30,000	<50	<50	--	(g,b)	
MW-5	9/5/2006		39.14	6.16	0.03	32.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/5/2007		39.14	8.34	--	30.80	90,000	10,000	4,200	1,900	7,900	<50	<2,000	57	<50	<50	<30,000	<50	<50	1.30	(b)	
MW-5	9/7/2007		39.14	15.15	0.15	23.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes
MW-5	1/14/2008		39.14	10.30	0.49	28.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	2/27/2008		39.14	13.22	0.12	25.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/6/2008		39.14	12.90	0.14	26.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/3/2008		39.14	12.90	0.99	26.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/4/2009		39.14	8.45	0.16	30.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	4/8/2009		39.14	9.05	0.67	30.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	5/11/2009		39.14	9.10	0.32	30.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	6/16/2009		39.14	9.15	0.02	29.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	7/22/2009		39.14	9.33	0.12	29.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	8/6/2009		39.14	10.05	0.01	29.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/30/2009		39.14	10.55	0.06	28.59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	10/28/2009		39.14	10.48	--	28.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	3/23/2010		39.14	7.10	--	32.04	67,000	1,400	380	620	1,800	<5.0	<40	<5.0	<5.0	<5.0	<1,000	<5.0	<5.0	--	
MW-5	6/10/2010		39.14	8.26	--	30.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/16/2010		39.14	9.14	--	30.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	2/23/2011		39.14	8.33	--	30.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/28/2011		39.14	10.46	--	28.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/8/2012		39.14	10.27	--	28.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	9/5/2012		39.14	11.80	1.40	27.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-5	3/20/2013		39.14	9.73	0.02	29.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,k)
MW-5	9/20/2013		39.14	10.26	--	28.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b,i)
MW-5	3/13/2014		39.14	9.74	--	29.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-5	9/25/2014		39.14	11.88	--	27.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-5	3/10/2015		39.14	9.89	0.01	29.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,k)
MW-5	9/21/2015		39.14	12.02	--	27.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(i,m)
MW-5	3/29/2016		39.14	6.80	--	32.34	17,200	2,240	178 (J)	626	667	<100	<500	<100	<100	<100	5,640 (J)	<100	<100	0.51	(o,p)
MW-5	9/29/2016		39.14	12.65	0.07	26.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,i)
MW-6	10/3/1991		41.59	20.73	--	20.86	<50	0.7	0.8	<0.3	1.3	--	--	--	--	--	--	--	--	--	
MW-6	10/15/1991		41.59	21.20	--	20.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	12/4/1991		41.59	21.26	--	20.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	12/16/1991		41.59	21.12	--	20.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	1/6/1992		41.59	20.29	--	21.30	<50	<0.5	<0.5	<0.5	1.6	--	--	--	--	--	--	--	--	--	
MW-6	1/22/1992		41.59	20.12	--	21.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	1/28/1992		41.59	20.20	--	21.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	2/5/1992		41.59	20.09	--	21.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	2/12/1992		41.59	19.15	--	22.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	2/17/1992		41.59	18.02	--	23.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	4/3/1992		41.59	16.62	--	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	4/8/1992		41.59	17.06	--	24.53	<50	0.6	<0.5	0.8	<0.5	--	--	--	--	--	--	--	--	--	
MW-6	4/14/1992		41.59	17.23	--	24.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	4/29/1992		41.59	18.12	--	23.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	5/7/1992		41.59	18.52	--	23.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	7/3/1992		41.59	19.71	--	21.88	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
MW-6	10/8/1992		41.59	21.22	--	20.37	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
MW-6	10/8/1992	Dup	41.59	21.22	--	20.37	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-6	12/31/1992		41.59	21.33	--	20.26	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
MW-6	4/21/1993		41.59	16.45	--	25.14	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
MW-6	7/7/1993		41.59	18.68	--	22.91	<50	<0.5	<0.5	<0.5	<0.5	28.96	--	--	--	--	--	--	--	--	
MW-6	9/21/1993		41.59	19.64	--	21.95	<50	<0.5	<0.5	<0.5	1.6	--	--	--	--	--	--	--	--	--	
MW-6	12/17/1993		41.59	21.08	--	20.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-6	12/23/1993		--	--	--	--	<50	<0.5	0.5	<0.5	0.6	13.95	--	--	--	--	--	--	--	--	
MW-6	4/7/1994		41.59	21.27	--	20.32	<50	<0.5	<0.5	<0.5	<0.5	35.1	--	--	--	--	--	--	--	6.10	
MW-6	7/6/1994		41.59	19.81	--	21.78	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	4.00	
MW-6	7/6/1994	Dup	41.59	19.81	--	21.78	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-6	10/7/1994		41.59	21.25	--	20.34	<50	<0.5	<0.5	<0.5	<0.5	24.3	--	--	--	--	--	--	--	3.50	

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes		
MW-6	1/27/1995		41.59	12.39	--	29.20	<50	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--	--	4.20			
MW-6	3/30/1995		41.59	11.34	--	30.25	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	6.10			
MW-6	6/20/1995		41.59	15.12	--	26.47	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--			
MW-6	10/3/1995		41.59	20.68	--	20.91	<50	<0.50	<0.50	<0.50	<1.0	66	--	--	--	--	--	--	--	6.40			
MW-6	12/6/1995		41.59	23.77	--	17.82	<50	<0.50	<0.50	<0.50	<1.0	45	--	--	--	--	--	--	--	5.70			
MW-6	3/21/1996		41.59	11.55	--	30.04	<50	<0.5	<1.0	<1.0	<1.0	41	--	--	--	--	--	--	--	9.10			
MW-6	6/21/1996		41.59	12.60	--	28.99	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	8.60			
MW-6	9/6/1996		41.59	13.25	--	28.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	9/9/1996		--	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	22	--	--	--	--	--	--	--	--	7.90		
MW-6	12/19/1996		41.59	11.45	--	30.14	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	7.70			
MW-6	3/17/1997		41.59	10.80	--	30.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	8/12/1997		41.59	13.11	--	28.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	12/10/1997		41.59	13.84	--	27.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/12/1998		41.59	11.17	--	30.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	6/23/1998		41.59	13.27	--	28.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/31/1999		41.59	12.91	--	28.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	8/25/1999		41.59	15.93	--	25.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/9/2000		41.59	11.49	--	30.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/8/2001		41.59	10.81	--	30.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/8/2002		41.59	14.28	--	27.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/18/2002		41.59	13.10	--	28.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/11/2003		41.59	13.63	--	27.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	12/9/2003		41.59	14.26	--	27.33	<50	<0.50	<0.50	<0.50	<0.50	12	<20	<0.50	<0.50	<0.50	<100	--	--	--			
MW-6	3/9/2004		41.59	11.87	--	29.72	<50	<0.50	<0.50	<0.50	<0.50	10	<20	<0.50	<0.50	<0.50	<100	0.58	<0.50	--			
MW-6	9/17/2004		41.59	16.45	--	25.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/7/2005		41.59	13.65	--	27.94	<50	<0.50	<0.50	<0.50	<0.50	5.8	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--			
MW-6	9/6/2005		44.37	14.23	--	30.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/6/2006		44.37	12.89	--	31.48	<50	<0.50	<0.50	<0.50	<0.50	8.1	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--			
MW-6	9/5/2006		44.37	14.10	--	30.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/5/2007		44.37	11.43	--	32.94	<50	<0.50	<0.50	<0.50	<0.50	5.6	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	2.57			
MW-6	9/7/2007		44.37	16.00	--	28.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/6/2008		44.37	11.84	--	32.53	<50	<0.50	<0.50	<0.50	<0.50	1.9	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	2.34			
MW-6	9/3/2008		44.37	16.24	--	28.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/4/2009		44.37	11.68	--	32.69	<50	<0.50	<0.50	<0.50	<0.50	2.8	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	4.66			
MW-6	9/30/2009		44.37	16.83	--	27.54	<50	<0.50	<0.50	<0.50	<0.50	4.4	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	0.10			
MW-6	10/28/2009		44.37	15.63	--	28.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	3/23/2010		44.37	11.48	--	32.89	<50	<0.50	<0.50	<0.50	<1.0	1	<4.0	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--			
MW-6	6/10/2010		44.37	12.54	--	31.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
MW-6	9/16/2010		44.37	15.95	--	28.42	<50	<0.50	<0.50	<0.50	<1.0	0.8	<4.0	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--			
MW-6	2/23/2011		44.37	12.34	--	32.03	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--			
MW-6	9/28/2011		44.37	15.81	--	28.56	--	--	--	--	--	3.4	--	--	--	--	--	--	--	--			
MW-6	3/8/2012		44.37	15.51	--	28.86	--	--	--	--	--	0.58	--	--	--	--	--	--	--	--			
MW-6	9/5/2012		44.37	15.88	--	28.49	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--			
MW-6	3/20/2013		44.37	14.36	--	30.01	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<4.0	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--			
MW-6	9/20/2013		44.37	16.02	--	28.35	--	--	--	--	--	2.4	--	--	--	--	--	--	--	--	4.72		
MW-6	3/13/2014		44.37	15.43	--	28.94	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--			
MW-6	9/25/2014		44.37	17.15	--	27.22	--	--	--	--	--	2	--	--	--	--	--	--	--	--	2.67		
MW-6	3/10/2015		44.37	14.66	--	29.71	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--	3.57		
MW-6	9/21/2015		44.37	18.54	--	25.83	--	--	--	--	--	1.88	--	--	--	--	--	--	--	--	2.29		
MW-6	3/29/2016		44.37	11.75	--	32.62	--	--	--	--	--	<1.00	--	--	--	--	--	--	--	--	0.28	(n)	
MW-6	9/29/2016		44.37	19.12	--	25.25	--	--	--	--	--	1.93	--	--	--	--	--	--	--	--	0.81	(n)	
MW-7	10/3/1991		40.64	14.93	--	25.71	360	62	13	3.4	20	--	--	--	--	--	--	--	--	--			
MW-7	10/15/1991		40.64	15.16	--	25.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-7	12/4/1991		40.64	15.41	--	25.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-7	12/16/1991		40.64	15.21	--	25.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-7	1/6/1992		40.64	14.56	--	26.08	1,100	170	<0.5	24	23	--	--	--	--	--	--	--	--	--	--	
MW-7	1/22/1992		40.64	14.63	--	26.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	1/28/1992		40.64	14.73	--	25.91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	2/5/1992		40.64	14.58	--	26.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	2/12/1992		40.64	13.94	--	26.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	2/17/1992		40.64	13.10	--	27.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	4/3/1992		40.64	12.66	--	27.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	4/8/1992		40.64	12.77	--	27.87	750	150	<0.5	23	9.9	--	--	--	--	--	--	--	--	--	--	
MW-7	4/14/1992		40.64	13.02	--	27.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	4/29/1992		40.64	13.59	--	27.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	5/7/1992		40.64	13.95	--	26.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	7/3/1992		40.64	14.73	--	25.91	660	210	<2.5	33	8	--	--	--	--	--	--	--	--	--	--	
MW-7	10/8/1992		40.64	15.75	--	24.89	320	49	1.4	13	6.2	--	--	--	--	--	--	--	--	--	--	
MW-7	12/31/1992		40.64	13.57	--	27.07	900	100	<2.5	28	4.3	--	--	--	--	--	--	--	--	--	--	
MW-7	4/21/1993		40.64	14.56	--	26.08	510	83	1.2	10	5.8	--	--	--	--	--	--	--	--	--	--	
MW-7	7/7/1993		40.32	13.40	--	26.92	1,100	160	2	27	4	10.84	--	--	--	--	--	--	--	--	--	(f)
MW-7	7/7/1993	Dup	40.32	13.40	--	26.92	1,100	170	1.9	29	2.84	9.84	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-7	9/21/1993		40.32	14.40	--	25.92	690	150	3.1	26	5.7	--	--	--	--	--	--	--	--	--	--	
MW-7	9/21/1993	Dup	40.32	14.40	--	25.92	640	140	1.7	23	2.4	--	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-7	12/17/1993		40.32	13.65	--	26.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	12/23/1993		--	--	--	--	250	64	1.2	9	1.8	7.81	--	--	--	--	--	--	--	--	--	
MW-7	4/7/1994		40.32	30.62	--	9.70	140	32	1.4	<0.5	<0.5	6.32	--	--	--	--	--	--	--	--	--	
MW-7	7/6/1994		40.32	16.88	--	23.44	410	94	1.3	10	3.5	<5.0	--	--	--	--	--	--	--	--	4.40	
MW-7	10/7/1994		40.32	25.59	--	14.73	<50	9.2	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	4.90	
MW-7	1/27/1995		40.32	9.82	--	30.50	810	570	3	60	17	--	--	--	--	--	--	--	--	--	0.00	
MW-7	1/27/1995	Dup	40.32	9.82	--	30.50	930	620	4	77	21	--	--	--	--	--	--	--	--	--	--	(Dup)(e)
MW-7	3/30/1995		40.32	9.15	--	31.17	180	65	0.53	2	<1.0	--	--	--	--	--	--	--	--	--	7.80	
MW-7	6/20/1995		40.32	11.38	--	28.94	2,800	980	<5.0	<5.0	43	--	--	--	--	--	--	--	--	--	--	
MW-7	10/3/1995		40.32	29.95	--	10.37	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	--	--	--	--	--	--	--	
MW-7	12/6/1995		40.32	29.85	--	10.47	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	--	--	--	--	--	--	--	
MW-7	3/21/1996		40.32	9.76	--	30.56	1,000	390	2	40	13	<10	--	--	--	--	--	--	--	--	7.40	
MW-7	6/21/1996		40.32	11.01	--	29.31	<250	40	<5.0	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	7.40	
MW-7	9/6/1996		40.32	11.68	--	28.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	9/9/1996		--	--	--	--	<250	13	<5.0	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	7.20	
MW-7	12/19/1996		40.32	10.78	--	29.54	70	1.2	<1.0	1	<1.0	<10	--	--	--	--	--	--	--	--	8.30	
MW-7	3/17/1997		40.32	9.96	--	30.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	8/12/1997		40.32	11.44	--	28.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	12/10/1997		40.32	10.42	--	29.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/12/1998		40.32	9.51	--	30.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	6/23/1998		40.32	9.98	--	30.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/31/1999		40.32	10.38	--	29.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	8/25/1999		40.32	12.38	--	27.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/9/2000		40.32	8.48	--	31.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/8/2001		40.32	8.37	--	31.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/18/2002		40.32	9.94	--	30.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/11/2003		40.32	11.26	--	29.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	12/9/2003		40.32	12.76	--	27.56	270	26	<0.50	<0.50	<0.50	8.7	<20	<0.50	<0.50	<0.50	<100	--	--	--		
MW-7	3/9/2004		40.32	10.91	--	29.41	320	49	0.73	1.8	0.59	6.9	<20	<0.50	<0.50	<0.50	<100	1.2	<0.50	--		
MW-7	9/17/2004		40.32	13.20	--	27.12	330	17	<0.50	<0.50	<0.50	7	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-7	3/7/2005		40.32	8.18	--	32.14	340	41	0.79	0.79	0.73	7.2	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-7	9/6/2005		43.10	11.80	--	31.30	1,100	130	1.2	1.8	<1.5	16	30	0.6	<0.50	<0.50	<150	<0.50	<0.50	--		
MW-7	3/6/2006		43.10	8.39	--	34.71	440	31	0.78	0.74	0.81	8.3	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--		
MW-7	9/5/2006		43.10	11.45	--	31.65	2,000	260	3.1	5.9	<2.5	12	<100	<2.5	<2.5	<2.5	<1,500	<2.5	<2.5	--		
MW-7	3/5/2007		43.10	9.31	--	33.79	2,200	110	2.2	4	1.8	7.6	<40	<1.0	<1.0	<1.0	<600	<1.0	<1.0	1.06		
MW-7	9/7/2007		43.10	12.18	--	30.92	220	8.4	<0.50	<0.50	<0.50	1.2	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	0.98		
MW-7	3/6/2008		43.10	10.05	--	33.05	1,800	54	1.2	1.1	<1.0	<1.0	<20	<1.0	<1.0	<1.0	<600	<1.0	<1.0	--		



Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-7	9/3/2008		43.10	13.17	--	29.93	540	13	0.69	<0.50	<0.50	5.5	17	<0.50	<0.50	<0.50	<300	<0.50	<0.50	4.77		
MW-7	3/4/2009		43.10	8.25	--	34.85	720	15	0.59	0.53	<0.50	3.4	12	<0.50	<0.50	<0.50	<300	<0.50	<0.50	1.29		
MW-7	9/30/2009		43.10	12.70	--	30.40	1,200	44	1	0.74	0.79	3.3	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	0.11		
MW-7	10/28/2009		43.10	11.17	--	31.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	3/23/2010		43.10	9.28	--	33.82	610	11	<0.50	<0.50	<1.0	<0.50	12	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-7	6/10/2010		43.10	10.24	--	32.86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	9/16/2010		43.10	12.16	--	30.94	4,700	130	<5.0	7.4	<10	<5.0	<40	<5.0	<5.0	<5.0	<1,000	<5.0	<5.0	--		
MW-7	2/23/2011		43.10	9.62	--	33.48	2,200	26	1.1	1.4	1.6	4	<4.0	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--		
MW-7	9/28/2011		43.10	11.80	--	31.30	3,800	380	4.8	28	4.3	9.5	13	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--		
MW-7	3/8/2012		43.10	11.69	--	31.41	550	1.4	<0.50	<0.50	<1.0	2.3	<4.0	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--		
MW-7	9/5/2012		43.10	11.60	--	31.50	830	16	1.3	0.66	1.4	3	<4.0	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--		
MW-7	3/20/2013		43.10	10.88	--	32.22	--	--	--	--	--	3.4	--	--	--	--	--	--	--	--	--	
MW-7	9/20/2013		43.10	11.50	--	31.60	580	<0.50	<0.50	<0.50	<1.0	2.3	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	4.18		
MW-7	3/13/2014		43.10	10.81	--	32.29	100	<0.50	<0.50	<0.50	<1.0	1.3	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	--		
MW-7	9/25/2014		43.10	12.15	--	30.95	640	<0.50	<0.50	<0.50	<1.0	2.6	<20	<0.50	<0.50	<0.50	<500	<0.50	<0.50	1.51	(i)	
MW-7	3/10/2015		43.10	10.75	--	32.35	310	0.8	<0.50	<0.50	<1.0	1.9	<20	<0.50	<0.50	<0.50	<500	<0.50	<0.50	1.52		
MW-7	9/21/2015		43.10	13.52	--	29.58	3,120	0.351 (J)	<5.00	<1.00	<3.00	2.29	8.53	<1.00	<1.00	<1.00	<100	<1.00	<1.00	2.26		
MW-7	3/29/2016		43.10	9.00	--	34.10	457	2.69	<5.00	0.496 (J)	<3.00	2.7	4.78 (J)	<1.00	<1.00	<1.00	73.0 (J)	<1.00	<1.00	1.92	(i,n)	
MW-7	9/29/2016		43.10	13.81	--	29.29	1,400	3.78	<5.00	0.768 (J)	1.43 (J)	3.18	7.41	<1.00	<1.00	<1.00	<100	<1.00	<1.00	1.41	(n)	
MW-8	10/3/1991		38.18	22.37	--	15.81	<50	<0.3	0.6	<0.3	0.9	--	--	--	--	--	--	--	--	--		
MW-8	10/15/1991		38.18	22.70	--	15.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	12/4/1991		38.18	22.44	--	15.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	12/16/1991		38.18	22.47	--	15.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	1/6/1992		38.18	21.94	--	16.24	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-8	1/22/1992		38.18	21.44	--	16.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	1/28/1992		38.18	21.20	--	16.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	2/5/1992		38.18	20.88	--	17.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	2/12/1992		38.18	20.54	--	17.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	2/17/1992		38.18	19.99	--	18.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	4/3/1992		38.18	16.75	--	21.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	4/8/1992		38.18	16.57	--	21.61	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-8	4/29/1992		38.18	18.61	--	19.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	5/7/1992		38.18	18.41	--	19.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	7/3/1992		38.18	20.35	--	17.83	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-8	10/8/1992		38.18	21.74	--	16.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	12/31/1992		38.18	19.09	--	19.09	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-8	4/21/1993		38.18	18.92	--	19.26	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-8	7/7/1993		38.18	17.76	--	20.42	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	--	
MW-8	9/21/1993		38.18	19.71	--	18.47	<50	2.9	2.2	2.2	7.1	--	--	--	--	--	--	--	--	--	--	
MW-8	12/17/1993		38.18	21.33	--	16.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	12/23/1993		--	--	--	--	<50	<0.5	<0.5	<0.5	0.6	<5.0	--	--	--	--	--	--	--	--	--	
MW-8	4/7/1994		38.18	21.51	--	16.67	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	6.60	
MW-8	7/6/1994		38.18	17.41	--	20.77	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	4.40	
MW-8	10/7/1994		38.18	19.20	--	18.98	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	3.70	
MW-8	1/27/1995		38.18	12.25	--	25.93	<50	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--	--	--	2.90	
MW-8	3/30/1995		38.18	10.35	--	27.83	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	8.30	
MW-8	6/20/1995		38.18	13.37	--	24.81	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	6.90	
MW-8	12/6/1995		38.18	18.42	--	19.76	<50	<0.50	<0.50	<0.50	<1.0	47	--	--	--	--	--	--	--	--	5.30	
MW-8	6/21/1996		38.18	13.03	--	25.15	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.00	
MW-8	9/6/1996		38.18	13.70	--	24.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	9/9/1996		--	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.00	
MW-8	12/19/1996		38.18	11.93	--	26.25	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.60	
MW-8	3/17/1997		38.18	11.29	--	26.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	8/12/1997		38.18	13.73	--	24.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	12/10/1997		38.18	11.88	--	26.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes	
MW-8	3/12/1998		38.18	11.89	--	26.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	6/23/1998		38.18	11.33	--	26.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/31/1999		38.18	12.68	--	25.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	8/25/1999		38.18	14.93	--	23.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/9/2000		38.18	9.14	--	29.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/8/2001		38.18	8.41	--	29.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/8/2002		38.18	11.18	--	27.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/18/2002		38.18	10.72	--	27.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/11/2003		38.18	10.46	--	27.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/9/2004		38.18	9.79	--	28.39	<50	<0.50	<0.50	<0.50	<0.50	0.5	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-8	9/17/2004		38.18	15.35	--	22.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/7/2005		38.18	7.94	--	30.24	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-8	9/6/2005		40.95	13.06	--	27.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/6/2006		40.95	9.26	--	31.69	<50	<0.50	<0.50	<0.50	<0.50	0.59	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--		
MW-8	9/5/2006		40.95	12.61	--	28.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/5/2007		40.95	9.12	--	31.83	<50	<0.50	<0.50	<0.50	0.53	<0.50	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	6.79		
MW-8	9/7/2007		40.95	13.56	--	27.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/6/2008		40.95	9.80	--	31.15	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	4.14		
MW-8	9/3/2008		40.95	14.20	--	26.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/4/2009		40.95	9.51	--	31.44	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	2.62		
MW-8	9/30/2009		40.95	14.92	--	26.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	10/28/2009		40.95	13.56	--	27.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	6/10/2010		40.95	11.06	--	29.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	9/16/2010		40.95	14.41	--	26.54	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<4.0	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--		
MW-8	9/28/2011		40.95	13.87	--	27.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/8/2012		40.95	13.27	--	27.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	9/5/2012		40.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/20/2013		40.95	11.90	--	29.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	9/20/2013		40.95	13.88	--	27.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	3/13/2014		40.95	14.29	--	26.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	9/25/2014		40.95	15.72	--	25.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-8	3/10/2015		40.95	12.65	--	28.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-8	9/21/2015		40.95	16.85	--	24.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-8	3/29/2016		40.95	9.94	--	31.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-8	9/29/2016		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(q,l)
MW-9	10/3/1991		41.25	14.12	--	27.13	<50	<0.3	0.4	<0.3	<0.3	--	--	--	--	--	--	--	--	--	--	
MW-9	10/15/1991		41.25	14.27	--	26.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	12/4/1991		41.25	13.84	--	27.41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	12/16/1991		41.25	14.18	--	27.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	1/6/1992		41.25	13.42	--	27.83	<50	<0.5	<0.5	<0.5	0.9	--	--	--	--	--	--	--	--	--	--	
MW-9	1/22/1992		41.25	13.75	--	27.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	1/28/1992		41.25	14.76	--	26.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	2/5/1992		41.25	13.38	--	27.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	2/12/1992		41.25	11.86	--	29.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	2/17/1992		41.25	10.78	--	30.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	4/3/1992		41.25	11.63	--	29.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	4/8/1992		41.25	12.25	--	29.00	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-9	4/14/1992		41.25	12.32	--	28.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	4/29/1992		41.25	13.07	--	28.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	5/7/1992		41.25	14.43	--	26.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	7/3/1992		41.25	13.85	--	27.40	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-9	10/8/1992		41.25	14.89	--	26.36	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-9	12/31/1992		41.25	11.90	--	29.35	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-9	4/21/1993		41.25	13.68	--	27.57	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	
MW-9	7/7/1993		41.25	13.12	--	28.13	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	--	

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
 4280 Foothill Blvd, Oakland, CA 94601

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes
MW-9	9/21/1993		41.25	14.00	--	27.25	<50	<0.5	<0.5	<0.5	0.9	--	--	--	--	--	--	--	--	--	--
MW-9	12/17/1993		41.25	12.98	--	28.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	12/23/1993		--	--	--	--	<50	<0.5	<0.5	<0.5	0.9	<5.0	--	--	--	--	--	--	--	--	--
MW-9	4/7/1994		41.25	13.24	--	28.01	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	4.70	--
MW-9	7/6/1994		41.25	13.77	--	27.48	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	3.90
MW-9	10/7/1994		41.25	14.60	--	26.65	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--	--	--	--	--	3.00
MW-9	1/27/1995		41.25	8.47	--	32.78	<50	<0.5	<0.5	<0.5	<1.0	--	--	--	--	--	--	--	--	--	2.50
MW-9	3/30/1995		41.25	8.19	--	33.06	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	8.40
MW-9	6/20/1995		41.25	11.25	--	30.00	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	8.10
MW-9	10/3/1995		41.25	14.68	--	26.57	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	--	--	--	--	--	--	6.00
MW-9	12/6/1995		41.25	16.07	--	25.18	<50	<0.50	<0.50	<0.50	<1.0	46	--	--	--	--	--	--	--	--	5.40
MW-9	3/21/1996		41.25	9.60	--	31.65	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	8.00
MW-9	6/21/1996		41.25	10.86	--	30.39	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.80
MW-9	9/6/1996		41.25	11.52	--	29.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	9/9/1996		--	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	21	--	--	--	--	--	--	--	--	7.30
MW-9	12/19/1996		41.25	10.43	--	30.82	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	7.30
MW-9	3/17/1997		41.25	9.87	--	31.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	8/12/1997		41.25	11.44	--	29.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	12/10/1997		41.25	10.44	--	30.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/12/1998		41.25	9.50	--	31.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	6/23/1998		41.25	10.06	--	31.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/31/1999		41.25	9.06	--	32.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	8/25/1999		41.25	12.00	--	29.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/9/2000		41.25	10.57	--	30.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/8/2001		41.25	9.73	--	31.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/8/2002		41.25	11.89	--	29.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/18/2002		41.25	9.68	--	31.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/11/2003		41.25	9.21	--	32.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/9/2004		41.25	10.99	--	30.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--	--
MW-9	9/17/2004		41.25	13.35	--	27.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/7/2005		41.25	8.94	--	32.31	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--	--
MW-9	9/6/2005		44.06	11.99	--	32.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/6/2006		44.06	8.26	--	35.80	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	--	--
MW-9	9/5/2006		44.06	11.63	--	32.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/5/2007		44.06	9.33	--	34.73	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<0.50	<0.50	<0.50	<300	<0.50	<0.50	2.22	--
MW-9	9/7/2007		44.06	12.28	--	31.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/6/2008		44.06	10.11	--	33.95	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	3.72	--
MW-9	9/3/2008		44.06	13.49	--	30.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/4/2009		44.06	8.15	--	35.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	4.03	--
MW-9	9/30/2009		44.06	12.98	--	31.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	10/28/2009		44.06	11.98	--	32.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/23/2010		44.06	10.59	--	33.47	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<4.0	<0.50	<0.50	<0.50	<100	<0.50	<0.50	--	--
MW-9	6/10/2010		44.06	10.25	--	33.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	2/23/2011		44.06	9.71	--	34.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	9/28/2011		44.06	11.66	--	32.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/8/2012		44.06	11.56	--	32.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	9/5/2012		44.06	11.18	--	32.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/20/2013		44.06	10.00	--	34.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	9/20/2013		44.06	10.91	--	33.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	3/13/2014		44.06	9.96	--	34.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	9/25/2014		44.06	11.53	--	32.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-9	3/10/2015		44.06	10.27	--	33.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-9	9/21/2015		44.06	13.41	--	30.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-9	3/29/2016		44.06	10.58	--	33.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)
MW-9	9/29/2016		44.06	13.74	--	30.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(l)

Table 2  
 Historical Groundwater Monitoring Data  
 CA-11109  
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Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes
MW-10	6/16/2009		39.78	8.60	0.01	31.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	7/22/2009		39.78	9.68	0.01	30.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	8/6/2009		39.78	9.48	--	30.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-10	9/30/2009		39.78	9.69	0.01	30.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	10/28/2009		39.78	8.53	--	31.25	62,000	8,300	5,300	3,100	12,000	<50	<400	<50	<50	<50	<10,000	<50	<50	--	
MW-10	3/23/2010		39.78	7.70	--	32.08	59,000	6,500	4,800	2,300	9,700	<100	<800	<100	<100	<100	<20,000	<100	<100	--	(b)
MW-10	6/10/2010		39.78	8.93	0.01	30.86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	9/16/2010		39.78	9.69	0.01	30.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	2/23/2011		39.78	7.99	--	31.79	61,000	7,000	5,300	2,800	12,000	<100	<800	<100	<100	<100	<50,000	<100	<100	--	
MW-10	9/28/2011		39.78	10.36	0.31	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	3/8/2012		39.78	10.51	0.32	29.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	9/5/2012		39.78	10.25	0.01	29.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-10	3/20/2013		39.78	9.48	0.01	30.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,k)
MW-10	9/20/2013		39.78	10.50	--	29.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b,i)
MW-10	3/13/2014		39.78	9.81	--	29.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,k)
MW-10	9/25/2014		39.78	11.08	--	28.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-10	3/10/2015		39.78	9.60	--	30.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(i)
MW-10	9/21/2015		39.78	11.75	--	28.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(i,m)
MW-10	3/29/2016		39.78	7.04	--	32.74	43,800	2,040	1,570	2,850	8,020	<100	<500	<100	<100	<100	5,760 (J)	<100	<100	0.71	(o,p)
MW-10	9/29/2016		39.78	12.17	0.01	27.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,i)
MW-11	9/30/2009		40.04	10.55	--	29.49	30,000	850	1,400	1,000	3,700	27	<200	<10	<10	<10	<6,000	<10	<10	--	
MW-11	10/28/2009		40.04	8.00	--	32.04	27,000	1,100	2,300	1,500	5,800	<50	<400	<50	<50	<50	<10,000	<50	<50	--	
MW-11	3/23/2010		40.04	7.25	--	32.79	21,000	530	830	790	2,200	<25	<200	<25	<25	<25	<5,000	<25	<25	--	
MW-11	6/10/2010		40.04	9.65	--	30.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-11	9/16/2010		40.04	9.42	--	30.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-11	2/23/2011		40.04	7.60	--	32.44	10,000	380	260	330	540	7.2	<40	<5.0	<5.0	<5.0	<2,500	<5.0	<5.0	--	
MW-11	9/28/2011		40.04	9.88	--	30.16	5,900	230	92	260	370	6.4	26	<2.5	<2.5	<2.5	<1,300	<2.5	<2.5	--	
MW-11	3/8/2012		40.04	9.71	--	30.33	5,000	280	170	250	380	<5.0	<40	<5.0	<5.0	<5.0	<2,500	<5.0	<5.0	--	
MW-11	9/5/2012		40.04	10.60	--	29.44	22,000	1,000	1,600	1,200	4,500	6.2	<40	<5.0	<5.0	<5.0	<2,500	<5.0	<5.0	--	
MW-11	3/20/2013		40.04	9.54	--	30.50	16,000	250	620	680	2,200	<10	<80	<10	<10	<10	<5,000	<10	<10	--	(i)
MW-11	9/20/2013		40.04	10.55	--	29.49	10,000	120	130	320	720	<10	<200	<10	<10	<10	<5,000	<10	<10	4.29	
MW-11	3/13/2014		40.04	9.71	--	30.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-11	9/25/2014		40.04	10.91	--	29.13	1,600	39	14	40	56	0.64	<20	<0.50	<0.50	<0.50	<500	<0.50	<0.50	3.05	(i)
MW-11	3/10/2015		40.04	9.49	--	30.55	7,600	130	90	260	520	<0.50	<20	<0.50	<0.50	<0.50	<500	<0.50	<0.50	1.40	
MW-11	9/21/2015		40.04	11.87	--	28.17	8,610	155	75.1	161	359	1.96	<5.00	<1.00	<1.00	<1.00	<100	<1.00	<1.00	2.23	(i)
MW-11	3/29/2016		40.04	6.95	--	33.09	20,000	193	86.1	285	316	1.34	7.03	<1.00	<1.00	<1.00	<100	<1.00	<1.00	0.67	(n)
MW-11	9/29/2016		40.04	12.43	--	27.61	9,380	244 (J3)	73 (J, J3)	173 (J3)	319 (J3)	<20 (J3)	<100	<20 (J3)	<20	<20	<2,000	<20 (J3)	<20 (J3)	0.74	(n)
MW-12	9/30/2009		40.32	11.02	0.02	29.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-12	10/28/2009		40.32	10.40	--	29.92	43,000	5,800	800	2,900	6,800	<50	<400	<50	<50	<50	<10,000	<50	<50	--	(z)
MW-12	3/23/2010		40.32	11.46	--	28.86	39,000	4,800	1,000	3,100	6,400	<25	<200	<25	<25	<25	<5,000	<25	<25	--	(b)
MW-12	6/10/2010		40.32	11.35	--	29.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-12	9/16/2010		40.32	11.54	0.02	28.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-12	2/23/2011		40.32	10.80	0.10	29.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-12	9/28/2011		40.32	11.48	0.20	28.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-12	3/8/2012		40.32	11.92	0.32	28.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-12	9/5/2012		40.32	11.63	1.43	29.76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g)
MW-12	3/20/2013		40.32	10.13	0.04	30.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,k)
MW-12	9/20/2013		40.32	10.92	--	29.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b,i)
MW-12	3/13/2014		40.32	10.60	--	29.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,k)
MW-12	9/25/2014		40.32	11.42	--	28.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b)
MW-12	3/10/2015		40.32	10.45	--	29.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(b,i)
MW-12	9/21/2015		40.32	12.04	--	28.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(i,m)
MW-12	3/29/2016		40.32	8.91	--	31.41	30,700	2,840	288	3,600	1,870	<25.0	<125	<25.0	<25.0	<25.0	1,110 (J)	<25.0	<25.0	0.73	(o,p)
MW-12	9/29/2016		40.32	12.53	0.03	27.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	(g,i)

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	DO (mg/l)	Notes
QC-2	10/8/1992		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	12/31/1992		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	7/7/1993		--	--	--	--	<50	<0.5	<0.5	<0.5	0.6	--	--	--	--	--	--	--	--	--	(h)
QC-2	9/21/1993		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	12/23/1993		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	4/7/1994		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	7/6/1994		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	10/7/1994		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	(h)
QC-2	1/27/1995		--	--	--	--	<50	<0.5	0.5	<0.5	<1.0	--	--	--	--	--	--	--	--	--	(h)
QC-2	3/30/1995		--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	(h)
QC-2	6/20/1995		--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	(h)
QC-2	10/3/1995		--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	--	--	--	--	--	--	(h)
QC-2	12/6/1995		--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	--	--	--	--	--	--	(h)
QC-2	3/21/1996		--	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	(h)
QC-2	6/21/1996		--	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	--	--	--	--	--	--	--	--	(h)

**Notes:**

- B = Benzene
- 1,2-DCA = 1,2-Dichloroethane
- DIPE = Di-isopropyl ether
- DO = Dissolved oxygen
- DRO = Diesel range organics, range C10-C28
- DTW = Depth to water in ft btoc
- E = Ethylbenzene
- EDB = 1,2-Dibromomethane
- ETBE = Ethyl tert butyl ether
- GRO = Gasoline range organics, range C6-C12
- GW Elev = Groundwater measured in ft msl
- LNAPL = Light non-aqueous phase liquid
- MTBE = Methyl tert butyl ether
- T = Toluene
- TAME = Tert-amyl methyl ether
- TBA = Tert-butyl alcohol
- TOC = Top of casing measured in ft (surveyed)
- X = Xylenes, total
- µg/L = Micrograms per liter
- mg/L = Milligrams per liter
- ft = feet
- ft btoc = feet below top of casing
- ft msl = feet relative to mean sea level
- Dup = Duplicate sample
- SHEEN = Sheen detected in well
- = Not analyzed/applicable/measured/ available
- < = Not detected at or above reported detection limit
- J = Estimated value between the reporting limit and method detection limit
- J3 = The associated batch QC was outside the established quality control range for precision
- (a) Sample exceeded EPA recommended holding time
- (b) Sheen in well
- (c) Well not sampled due to damage during site construction
- (d) Insufficient water to sample
- (e) Blind duplicate
- (f) TOC lowered
- (g) Free product in well
- (h) Trip Blank

- (i) Hydrocarbon odor observed at wellhead
  - (j) Well is dry
  - (k) GWE adjusted assuming specific gravity of 0.75 for free product
  - (l) Well not sampled in accordance with groundwater sampling schedule
  - (m) SoakEase present in well, but no NAPL. Replaced SoakEase and no sample collection.
  - (n) Replaced hydrosleeve
  - (o) No hydrosleeve upon arrival, deployed new hydrosleeve to collect sample, no hydrosleeve replaced
  - (p) Replaced SPH sock
  - (q) Well was inaccessible
  - (\*) Laboratory control sample and/ or laboratory control sample duplicate exceeds the control limits
1. Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported.
  2. Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12.
  3. GRO analysis was completed by EPA method 8260B (C4-C12) for samples collected from the time period April 2006 through February 4, 2008. The analysis for GRO was changed to EPA method 8015B (C6-C12) for samples collected from the time period February 5, 2008 through the present.
  4. The data within this table collected prior to April 2006 was provided to ARCADIS U.S., Inc. by Atlantic Richfield Company and their previous consultants. ARCADIS U.S., Inc. has not verified the accuracy of this information.

**Table 3**  
**Historical Groundwater Flow Direction and Gradient**  
**CA-11109**  
**4280 Foothill Blvd., Oakland, CA**

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
3/6/2006	Southwest	0.05
9/5/2006	Southwest	0.05
2/21/2007	Southwest	0.02
9/7/2007	Southwest	0.03
3/6/2008	Southwest	0.01
9/3/2008	Southwest	0.006
3/4/2009	Southwest	0.02
9/30/2009	Northwest	0.07
10/28/2009	Northwest	0.04
3/23/2010	Northwest	0.03
6/10/2010	Northwest	0.02
9/16/2010	Northwest	0.07
2/23/2011	Northwest	0.04
9/28/2011	Northwest	0.02
3/8/2012	Northwest	0.06
9/5/2012	West-Northwest	0.04
3/20/2013	Southwest	0.03
9/20/2013	Southwest	0.03
3/13/2014	Southwest	0.05
9/25/2014	Southwest	0.05
3/10/2015	Southwest	0.05
9/21/2015	Southwest	0.03
3/29/2016	Southwest	0.07
9/29/2016	Southwest	0.05

**Notes:**

N/A = Not Available

ft/ft = Feet per foot

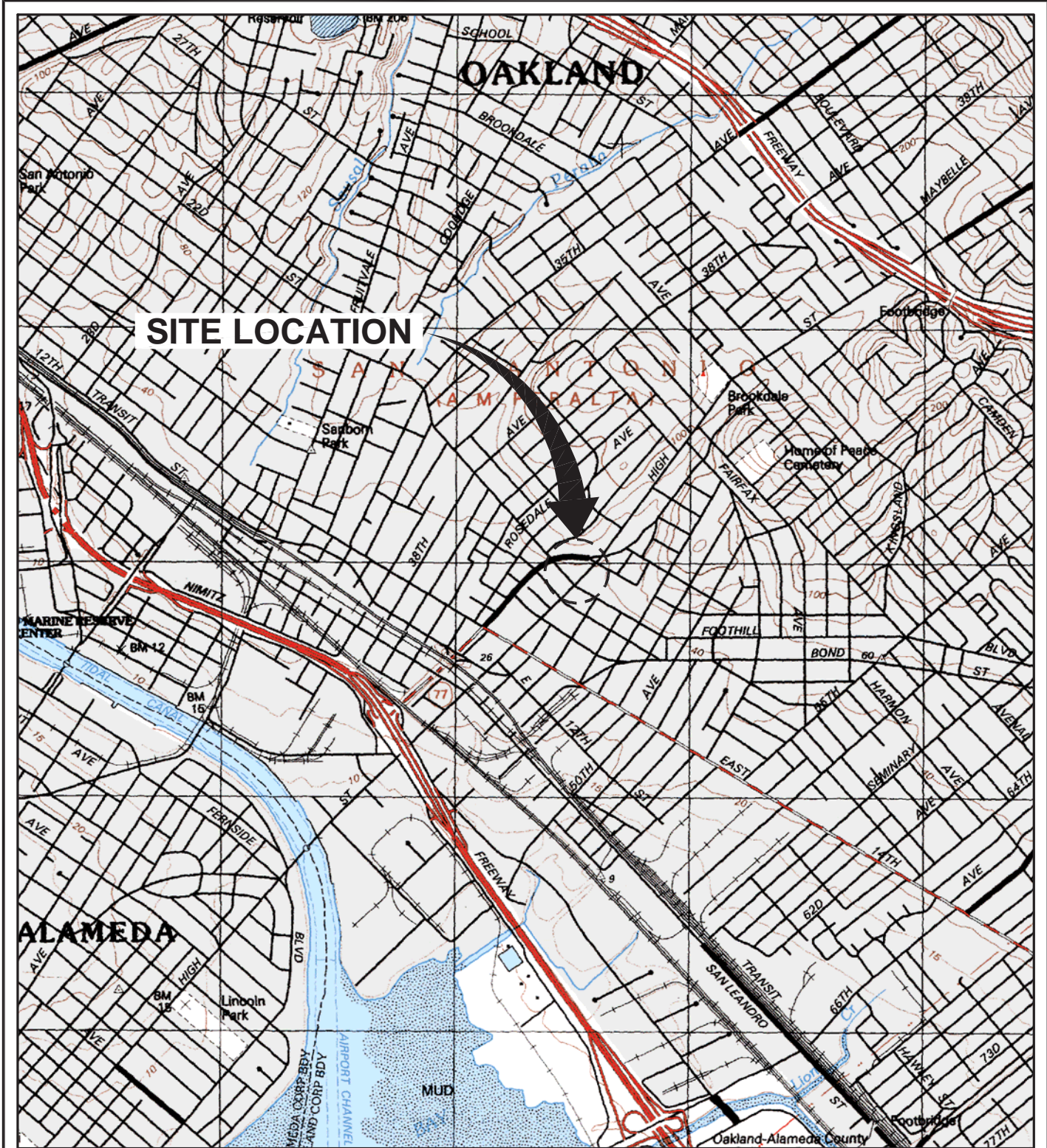
Note: All data collected following September 2009 was collected by Arcadis U.S., Inc. (Arcadis). The data within this table collected prior to September 2009 was provided to Arcadis by Atlantic Richfield Company and their previous consultants.

# FIGURES

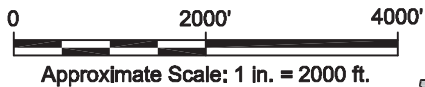




CITY: PATALUMA, CA DIV: GROUP: ENV DB: J. HARRIS LD: PIC: RM: H. PHILLIPS TM: B. MCKENNA LVR: (ON)ON= "OFF" = "REF" G: ENVCAD: Pataluma\AC\TGP09BPNAC\106\1060000\GPO9BPNAC106-1.dwg LAYOUT: TSAVED: 11/20/2009 8:30 AM ACADVER: 17.15 (LMS TECH) PAGES: SETUP: PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 11/20/2009 8:40 AM BY: HARRIS, JESSICA



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., OAKLAND WEST, CA., 1993, AND SAN LEANDRO, 1993, REVISED 1996.



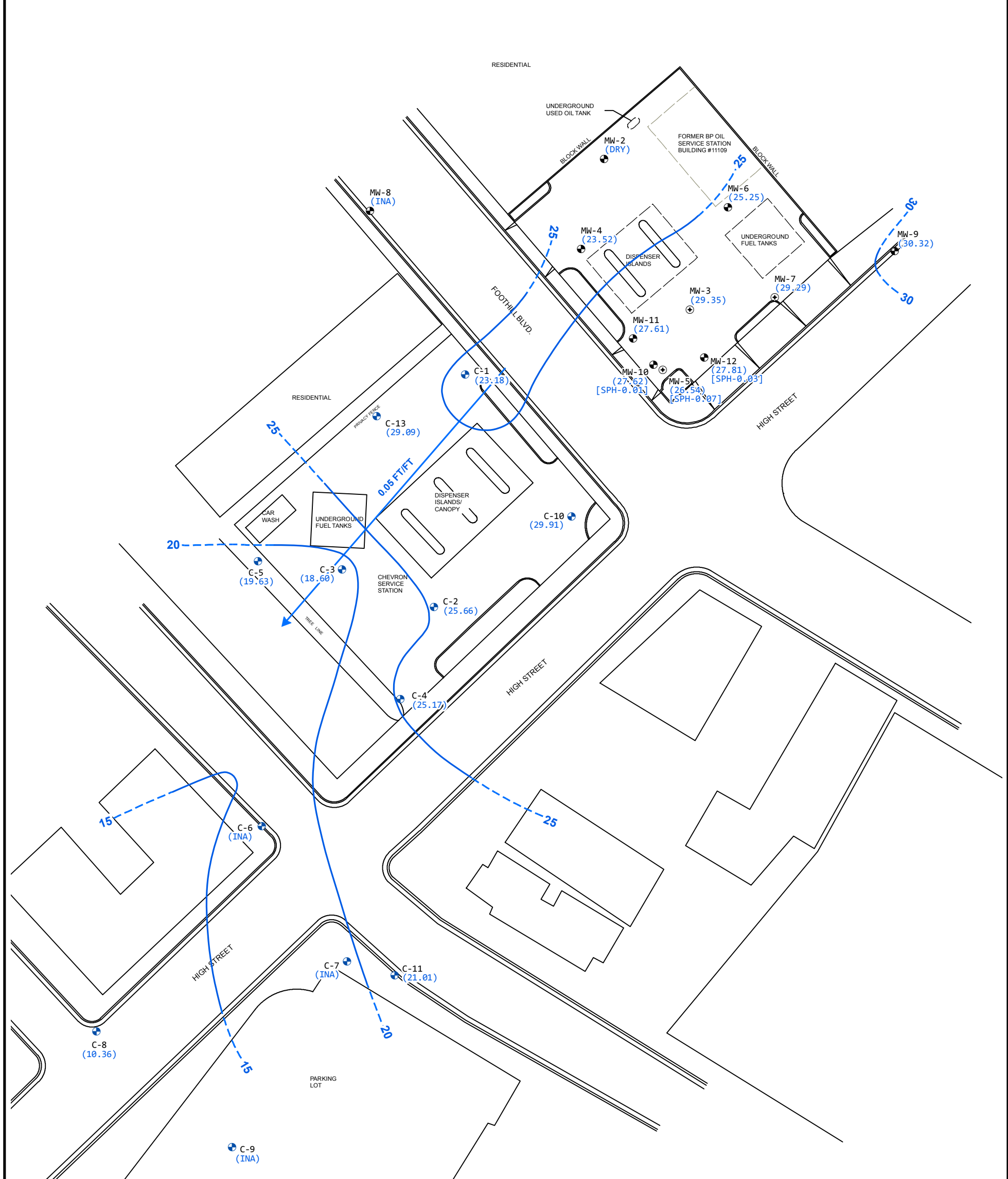
FORMER BP STATION #11109  
4280 FOOTHILL BOULEVARD  
OAKLAND, CALIFORNIA

**SITE LOCATION MAP**



FIGURE  
**1**





**LEGEND:**

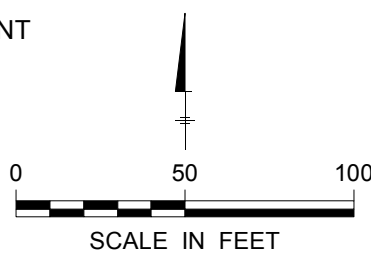
- GROUNDWATER MONITORING WELL
- ⊕ GROUNDWATER MONITORING WELL-CHEVRON
- ⊕ RECOVERY POINT
- (10.36) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- 20.00 — GROUNDWATER ELEVATION CONTOUR LINE (DASHED WHERE INFERRED)
- 0.05 FT/FT → GROUNDWATER FLOW DIRECTION AND GRADIENT (FOOT PER FOOT)
- [SPH - 0.03] SEPARATE- PHASE HYDROCARBONS
- (INA) INACCESSIBLE
- (DRY) WELL DRY DURING GROUNDWATER MONITORING EVENT

**NOTES:**

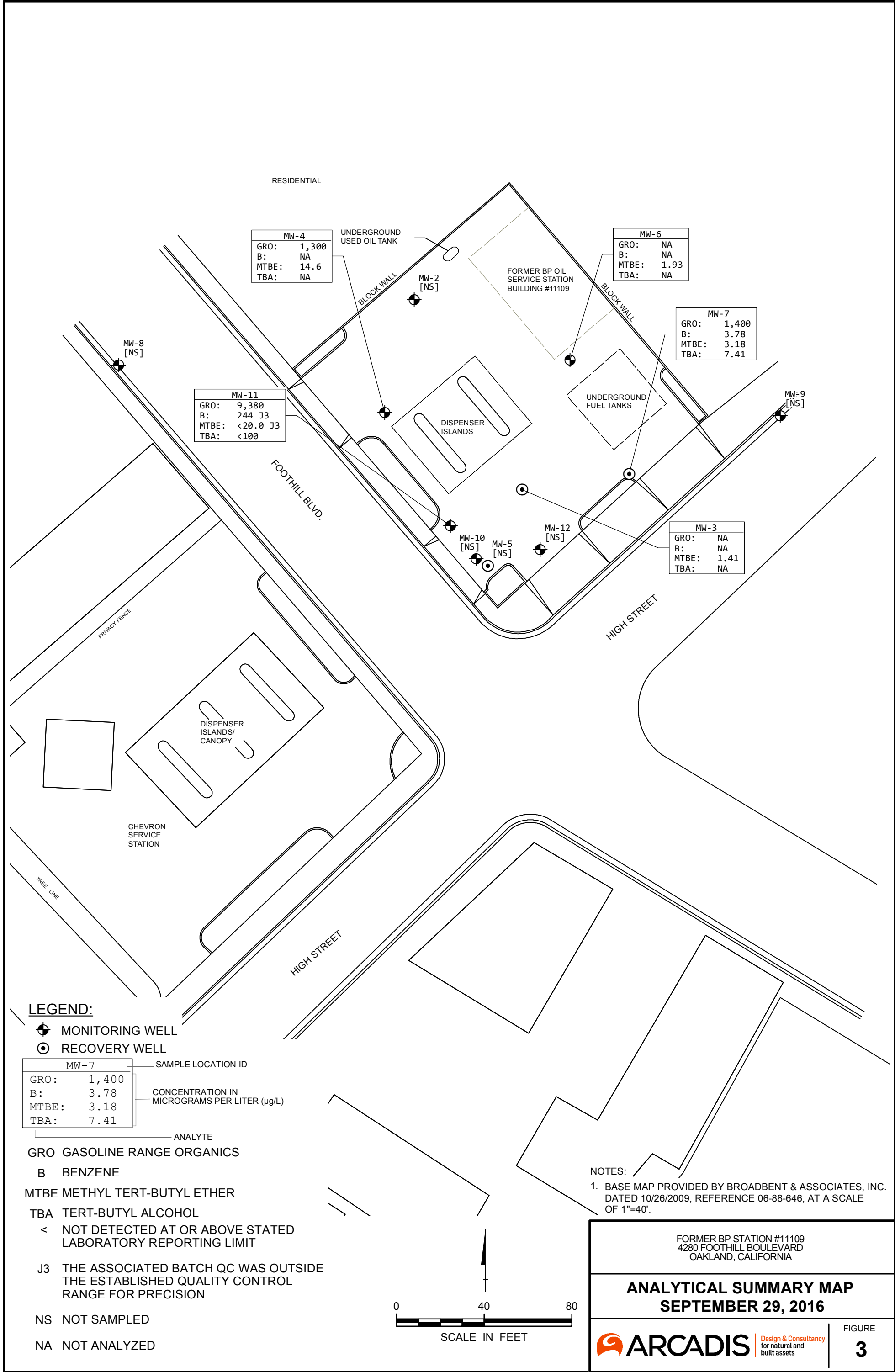
1. GROUNDWATER ELEVATIONS AT ADJACENT CHEVRON SITE CALCULATED BASED ON FIELD DEPTH TO WATER DATA MEASURED ON SEPTEMBER 29, 2016 AND PROVIDED BY CHEVRON; TOP OF CASING MEASUREMENTS AVAILABLE ON GEOTRACKER.

**NOTES:**

1. BASE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC. DATED 10/26/2009, REFERENCE 06-88-646, AT A SCALE OF 1"=40'.



FORMER BP STATION #11109 4280 FOOTHILL BOULEVARD OAKLAND, CALIFORNIA	
<b>GROUNDWATER ELEVATION CONTOUR MAP - SEPTEMBER 29, 2016</b>	
<b>ARCADIS</b> Design & Consultancy for natural and built assets	FIGURE <b>2</b>



MW-4	
GRO:	1,300
B:	NA
MTBE:	14.6
TBA:	NA

MW-6	
GRO:	NA
B:	NA
MTBE:	1.93
TBA:	NA

MW-7	
GRO:	1,400
B:	3.78
MTBE:	3.18
TBA:	7.41

MW-11	
GRO:	9,380
B:	244 J3
MTBE:	<20.0 J3
TBA:	<100

MW-3	
GRO:	NA
B:	NA
MTBE:	1.41
TBA:	NA

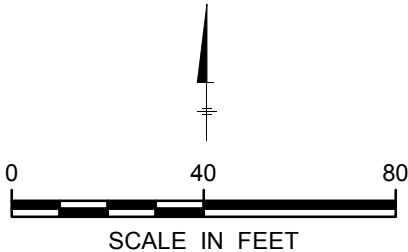
**LEGEND:**

- ⊕ MONITORING WELL
- ⊙ RECOVERY WELL

MW-7	
GRO:	1,400
B:	3.78
MTBE:	3.18
TBA:	7.41

- SAMPLE LOCATION ID
- CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- ANALYTE
- GRO GASOLINE RANGE ORGANICS
- B BENZENE
- MTBE METHYL TERT-BUTYL ETHER
- TBA TERT-BUTYL ALCOHOL
- < NOT DETECTED AT OR ABOVE STATED LABORATORY REPORTING LIMIT
- J3 THE ASSOCIATED BATCH QC WAS OUTSIDE THE ESTABLISHED QUALITY CONTROL RANGE FOR PRECISION
- NS NOT SAMPLED
- NA NOT ANALYZED

NOTES:  
 1. BASE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC. DATED 10/26/2009, REFERENCE 06-88-646, AT A SCALE OF 1"=40'.



FORMER BP STATION #11109  
 4280 FOOTHILL BOULEVARD  
 OAKLAND, CALIFORNIA

**ANALYTICAL SUMMARY MAP**  
**SEPTEMBER 29, 2016**

**ARCADIS** Design & Consultancy for natural and built assets

FIGURE **3**

# ATTACHMENT 1

Field Methods



## **QUALITY ASSURANCE/QUALITY CONTROL FIELD METHODS**

Field methods discussed herein were implemented to provide for accuracy and reliability of field activities, data collection, sample collection, and handling. Discussion of these methods is provided below.

### **1.0 Equipment Calibration**

Equipment calibration was performed per equipment manufacturer specifications before use.

### **2.0 Depth to Groundwater and Light Non-Aqueous Phase Liquid Measurement**

Depth to groundwater was measured in wells identified for gauging in the scope of work using a decontaminated water level indicator. The depth to water measurement was taken from a cut notch or permanent mark at the top of the well casing to which the well head elevation was originally surveyed.

Once depth to water was measured, an oil/water interface meter or a new disposable bailer was utilized to evaluate the presence and, if present, to measure the “apparent” thickness of light non-aqueous phase liquid (LNAPL) in the well. If LNAPL was present in the well, groundwater purging and sampling were not performed, unless sampling procedures in the scope of work specified collection of samples in the presence of LNAPL. Otherwise, time allowing, LNAPL was bailed from the well using either a new disposable bailer, or the disposal bailer previously used for initial LNAPL assessment. Bailing of LNAPL continued until the thickness of LNAPL (or volume) stabilized in each bailer pulled from the well, or LNAPL was no longer present. After LNAPL thickness either stabilized or was eliminated, periodic depth to water and depth to LNAPL measurements were collected as product came back into the well to evaluate product recovery rate and to aid in further assessment of LNAPL in the subsurface. LNAPL thickness measurements were recorded as “apparent.” If a bailer was used for LNAPL thickness measurement, the field sampler noted the bailer entry diameter and chamber diameter to enable correction of thickness measurements. Recovered LNAPL was stored on-site in a labeled steel drum(s) or other appropriate container(s) prior to disposal.

### **3.0 Well Purging and Groundwater Sample Collection**

Well purging and groundwater sampling were performed in wells specified in the scope of work after measuring depth to groundwater and evaluating the presence of LNAPL. Purging and sampling were performed using one of the methods detailed below. The method used was noted in the field records. Purge water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal or on-site treatment (in cases where treatment using an on-site system is authorized).

#### **3.1 Purging a Predetermined Well Volume**

Purging a predetermined well volume is performed per ASTM International (ASTM) D4448-01. This purging method has the objective of removing a predetermined volume of stagnant water from the well prior to sampling. The volume of stagnant water

is defined as either the volume of water contained within the well casing, or the volume within the well casing and sand/gravel in the annulus if natural flow through these is deemed insufficient to keep them flushed out.

This purging method involves removal of a minimum of three stagnant water volumes from the well using a decontaminated pump with new disposable plastic discharge or suction tubing, dedicated well tubing, or using a new disposable or decontaminated reusable bailer. If a new disposable bailer was used for assessment of LNAPL, that bailer may be used for purging. The withdrawal rate used is one that minimizes drawdown while satisfying time constraints.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity<sup>1</sup>. Parameters are considered stable when two (2) consecutive readings recorded three (3) minutes apart fall within ranges provided below in Table 1. In the event that the parameters have not stabilized and five (5) well casing volumes have been removed, purging activities will cease and be considered complete. Once the well is purged, a groundwater sample(s) is collected from the well using a new disposable bailer. If a new disposable bailer was used for purging, that bailer may be used to collect the sample(s). A sample is not collected if the well is inadvertently purged dry.

Table 1. Criteria for Defining Stabilization of Water-Quality Indicator Parameters

Parameter	Stabilization Criterion
Temperature	± 0.2°C (± 0.36°F)
pH	± 0.1 standard units
Conductivity	± 3%
Dissolved oxygen	± 10%
Oxidation reduction potential	± 10 mV
Turbidity <sup>1</sup>	± 10% or 1.0 NTU (whichever is greater)

### 3.2 Low-Flow Purging and Sampling

“Low-Flow”, “Minimal Drawdown”, or “Low-Stress” purging is performed per ASTM D6771-02. It is a method of groundwater removal from within a well’s screened interval that is intended to minimize drawdown and mixing of the water column in the well casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or suction tubing or dedicated well tubing at a low flow rate while evaluating the groundwater elevation during pumping.

<sup>1</sup> As stated in ASTM D6771-02, turbidity is not a chemical parameter and not indicative of when formation-quality water is being purged; however, turbidity may be helpful in evaluating stress on the formation during purging. Turbidity measurements are taken at the same time that stabilization parameter measurements are made, or, at a minimum, once when purging is initiated and again just prior to sample collection, after stabilization parameters have stabilized. To avoid artifacts in sample analysis, turbidity should be as low as possible when samples are collected. If turbidity values are persistently high, the withdrawal rate is lowered until turbidity decreases. If high turbidity persists even after lowering the withdrawal rate, the purging is stopped for a period of time until turbidity settles, and the purging process is then restarted. If this fails to solve the problem, the purging/sampling process for the well is ceased, and well maintenance or redevelopment is considered.

The low flow pumping rate is well specific and is generally established at a volume that is less than or equal to the natural recovery rate of the well. A pump with adjustable flow rate control is positioned with the intake at or near the mid-point of the submerged well screen. The pumping rate used during low-flow purging is low enough to minimize mobilization of particulate matter and drawdown (stress) of the water column. Low-flow purging rates will vary based on the individual well characteristics; however, the purge rate should not exceed 1.0 Liter per minute (L/min) or 0.25 gallon per minute (gal/min). Low-flow purging should begin at a rate of approximately 0.1 L/min (0.03 gal/min)<sup>2</sup>, or the lowest rate possible, and be adjusted based on an evaluation of drawdown. Water level measurements should be recorded at approximate one (1) to two (2) minute intervals until the low-flow rate has been established, and drawdown is minimized. As a general rule, drawdown should not exceed 25% of the distance between the top of the water column and the pump in-take.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity<sup>1</sup>. The frequency between measurements will be at an interval of one (1) to three (3) minutes; however, if a flow cell is used, the frequency will be determined based on the time required to evacuate one cell volume. Stabilization is defined as three (3) consecutive readings recorded several minutes apart falling within ranges provided in Table 1. Samples will be collected by filling appropriate containers from the pump discharge tubing at a rate not to exceed the established pumping rate.

### 3.3 Minimal Purge, Discrete Depth, and Passive Sampling

Per ASTM D4448-01, sampling techniques that do not rely on purging, or require only minimal purging, may be used if a particular zone within a screened interval is to be sampled or if a well is not capable of yielding sufficient groundwater for purging. To properly use these sampling techniques, a water sample is collected within the screened interval with little or no mixing of the water column within the casing. These techniques include minimal purge sampling which uses a dedicated sampling pump capable of pumping rates of less than 0.1 L/min (0.03 gal/min)<sup>2</sup>, discrete depth sampling using a bailer that allows groundwater entry at a controlled depth (e.g. differential pressure bailer), or passive (diffusion) sampling. These techniques are based on certain studies referenced in ASTM D4448-01 that indicate that under certain conditions, natural groundwater flow is laminar and horizontal with little or no mixing within the well screen.

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<sup>2</sup> According to ASTM D4448-01, studies have indicated that at flow rates of 0.1 L/min, low-density polyethylene (LDPE) and plasticized polypropylene tubing materials are prone to sorption. Therefore, TFE-fluorocarbon or other appropriate tubing material is used, particularly when tubing lengths of 50 feet or longer are used.

#### 4.0 Decontamination

Reusable groundwater sampling equipment were cleaned using a solution of Alconox or other acceptable detergent, rinsed with tap water, and finally rinsed with distilled water prior to use in each well. Decontamination water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal.

#### 5.0 Sample Containers, Labeling, and Storage

Samples were collected in laboratory prepared containers with appropriate preservative (if preservative was required). Samples were properly labeled (site name, sample I.D., sampler initials, date, and time of collection) and stored chilled (refrigerator or ice chest with ice) until delivery to a certified laboratory, under chain of custody procedures.

#### 6.0 Chain of Custody Record and Procedure

The field sampler was personally responsible for care and custody of the samples collected until they were properly transferred to another party. To document custody and transfer of samples, a Chain of Custody Record was prepared. The Chain of Custody Record provided identification of the samples corresponding to sample labels and specified analyses to be performed by the laboratory. The original Chain of Custody Record accompanied the shipment, and a copy of the record was stored in the project file. When the samples were transferred, the individuals relinquishing and receiving them signed, dated, and noted the time of transfer on the record.

#### 7.0 Field Records

Daily Report and data forms were completed by staff personnel to provide daily record of significant events, observations, and measurements. Field records were signed, dated, and stored in the project file.

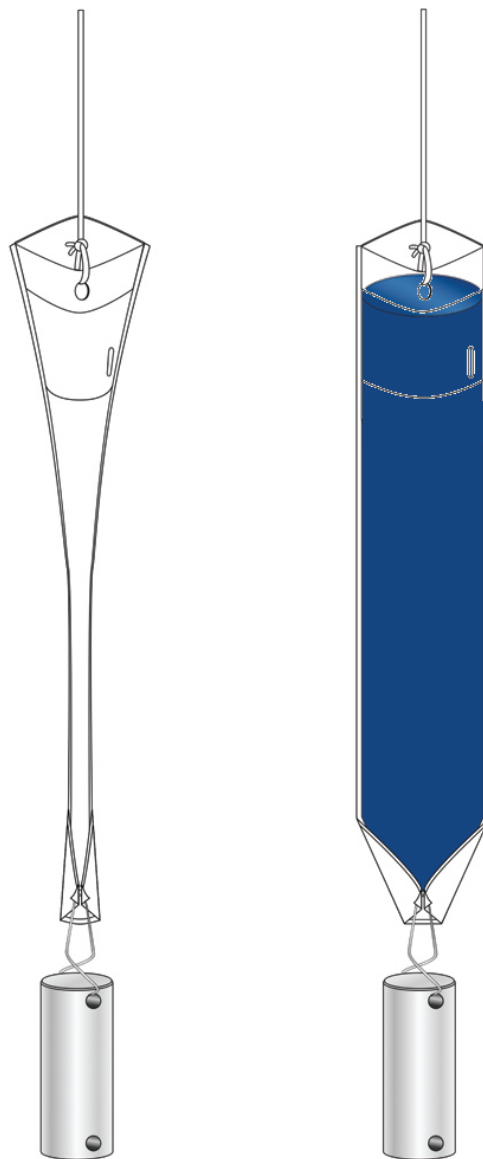


# HYDRASleeve™

Simple by Design

US Patent No. 6,481,300; No. 6,837,120 others pending

## Standard Operating Procedure: Sampling Ground Water with a HydraSleeve



This Guide should be used in addition to field manuals appropriate to sampling device (i.e., HydraSleeve or Super Sleeve).

Find the appropriate field manual on the HydraSleeve website at <http://www.hydrasleeve.com>.

For more information about the HydraSleeve, or if you have questions, contact:  
GeoInsight, 2007 Glass Road, Las Cruces, NM 88005, 1-800-996-2225,  
[info@hydrasleeve.com](mailto:info@hydrasleeve.com).

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## Introduction

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The HydraSleeve is classified as a no-purge (passive) grab sampling device, meaning that it is used to collect ground-water samples directly from the screened interval of a well without having to purge the well prior to sample collection. When it is used as described in this Standard Operating Procedure (SOP), the HydraSleeve causes no drawdown in the well (until the sample is withdrawn from the water column) and only minimal disturbance of the water column, because it has a very thin cross section and it displaces very little water (<100 ml) during deployment in the well. The HydraSleeve collects a sample from within the screen only, and it excludes water from any other part of the water column in the well through the use of a self-sealing check valve at the top of the sampler. It is a single-use (disposable) sampler that is not intended for reuse, so there are no decontamination requirements for the sampler itself.

The use of no-purge sampling as a means of collecting representative ground-water samples depends on the natural movement of ground water (under ambient hydraulic head) from the formation adjacent to the well screen through the screen. Robin and Gillham (1987) demonstrated the existence of a dynamic equilibrium between the water in a formation and the water in a well screen installed in that formation, which results in formation-quality water being available in the well screen for sampling at all times. No-purge sampling devices like the HydraSleeve collect this formation-quality water as the sample, under undisturbed (non-pumping) natural flow conditions. Samples collected in this manner generally provide more conservative (i.e., higher concentration) values than samples collected using well-volume purging, and values equivalent to samples collected using low-flow purging and sampling (Parsons, 2005).

## Applications of the HydraSleeve

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The HydraSleeve can be used to collect representative samples of ground water for all analytes (volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], common metals, trace metals, major cations and anions, dissolved gases, total dissolved solids, radionuclides, pesticides, PCBs, explosive compounds, and all other analytical parameters). Designs are available to collect samples from wells from 1” inside diameter and larger. The HydraSleeve can collect samples from wells of any yield, but it is especially well-suited to collecting samples from low-yield wells, where other sampling methods can’t be used reliably because their use results in dewatering of the well screen and alteration of sample chemistry (McAlary and Barker, 1987).

The HydraSleeve can collect samples from wells of any depth, and it can be used for single-event sampling or long-term ground-water monitoring programs. Because of its thin cross section and flexible construction, it can be used in narrow, constricted or damaged wells where rigid sampling devices may not fit. Using multiple HydraSleeves deployed in series along a single suspension line or tether, it is also possible to conduct in-well vertical profiling in wells in which contaminant concentrations are thought to be stratified.

As with all groundwater sampling devices, HydraSleeves should not be used to collect groundwater samples from wells in which separate (non-aqueous) phase hydrocarbons (i.e., gasoline, diesel fuel or jet fuel) are present because of the possibility of incorporating some of the separate-phase hydrocarbon into the sample.

## Description of the HydraSleeve

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The HydraSleeve (Figure 1) consists of the following basic components:

- A suspension line or tether (A.), attached to the spring clip or directly to the top of the sleeve to deploy the device into and recover the device from the well. Tethers with depth indicators marked in 1-foot intervals are available from the manufacturer.
- A long, flexible, 4-mil thick lay-flat polyethylene sample sleeve (C.) sealed at the bottom (this is the sample chamber), which comes in different sizes, as discussed below with a self-sealing reed-type flexible polyethylene check valve built into the top of the sleeve (B.) to prevent water from entering or exiting the sampler except during sample acquisition.
- A reusable stainless-steel weight with clip (D.), which is attached to the bottom of the sleeve to carry it down the well to its intended depth in the water column. Bottom weights available from the manufacturer are 0.75" OD and are available in three sizes: 5 oz. (2.5" long); 8 oz. (4" long); and 16 oz. (8" long). In lieu of a bottom weight, an optional top weight may be attached to the top of the HydraSleeve to carry it to depth and to compress it at the bottom of the well (not shown in Figure 1);
- A discharge tube that is used to puncture the HydraSleeve after it is recovered from the well so the sample can be decanted into sample bottles (not shown).
- Just above the self-sealing check valve at the top of the sleeve are two holes which provide attachment points for the spring clip and/or suspension line or tether. At the bottom of the sample sleeve are two holes which provide attachment points for the weight clip and weight.

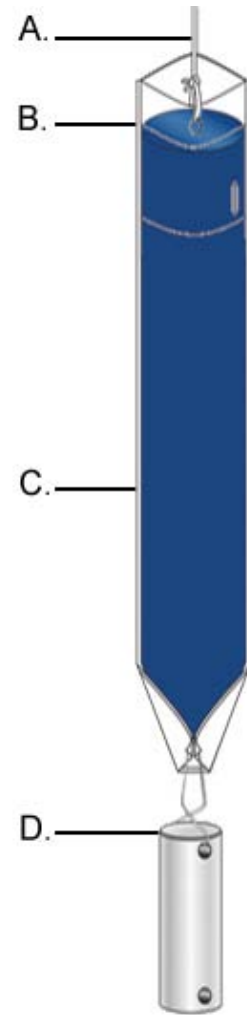


Figure 1. HydraSleeve components.

**Note:** The sample sleeve and the discharge tube are designed for one-time use and are disposable. The spring clip, weight and weight clip may be reused after thorough cleaning. Suspension cord is generally disposed after one use although, if it is dedicated to the well, it may be reused at the discretion of the sampling personnel.

## Selecting the HydraSleeve Size to Meet Site-Specific Sampling Objectives

It is important to understand that each HydraSleeve is able to collect a finite volume of sample because, after the HydraSleeve is deployed, you only get one chance to collect an undisturbed sample. Thus, the volume of sample required to meet your site-specific sampling and analytical requirements will dictate the size of HydraSleeve you need to meet these requirements.

The volume of sample collected by the HydraSleeve varies with the diameter and length of the HydraSleeve. Dimensions and volumes of available HydraSleeve models are detailed in Table 1.

**Table 1. Dimensions and volumes of HydraSleeve models.**

Diameter	Volume	Length	Lay-Flat Width	Filled Dia.
<i>2-Inch HydraSleeves</i>				
Standard 625-ml HydraSleeve	625 ml	< 30"	2.5"	1.4"
Standard 1-Liter HydraSleeve	1 Liter	38"	3"	1.9"
1-Liter HydraSleeve SS	1 Liter	36"	3"	1.9"
2-Liter HydraSleeve SS	2 Liters	60"	3"	1.9"
<i>4-Inch HydraSleeves</i>				
Standard 1.6-Liter HydraSleeve	1.6 Liters	30"	3.8"	2.3"
Custom 2-Liter HydraSleeve	2 Liters	36"	4"	2.7"

HydraSleeves can be custom-fabricated by the manufacturer in varying diameters and lengths to meet specific volume requirements. HydraSleeves can also be deployed in series (i.e., multiple HydraSleeves attached to one tether) to collect additional sample to meet specific volume requirements, as described below.

If you have questions regarding the availability of sufficient volume of sample to satisfy laboratory requirements for analysis, it is recommended that you contact the laboratory to discuss the minimum volumes needed for each suite of analytes. Laboratories often require only 10% to 25% of the volume they specify to complete analysis for specific suites of analytes, so they can often work with much smaller sample volumes that can easily be supplied by a HydraSleeve.

## HydraSleeve Deployment

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### Information Required Before Deploying a HydraSleeve

Before installing a HydraSleeve in any well, you will need to know the following:

- The inside diameter of the well
- The length of the well screen
- The water level in the well
- The position of the well screen in the well
- The total depth of the well

The inside diameter of the well is used to determine the appropriate HydraSleeve diameter for use in the well. The other information is used to determine the proper placement of the HydraSleeve in the well to collect a representative sample from the screen (see HydraSleeve Placement, below), and to determine the appropriate length of tether to attach to the HydraSleeve to deploy it at the appropriate position in the well.

Most of this information (with the exception of the water level) should be available from the well log; if not, it will have to be collected by some other means. The inside diameter of the well can be measured at the top of the well casing, and the total depth of the well can be measured by sounding the bottom of the well with a weighted tape. The position and length of the well screen may have to be determined using a down-hole camera if a well log is not available. The water level in the well can be measured using any commonly available water-level gauge.

## HydraSleeve Placement

The HydraSleeve is designed to collect a sample directly from the well screen, and it fills by pulling it up through the screen a distance equivalent to 1 to 1.5 times its length. This upward motion causes the top check valve to open, which allows the device to fill. To optimize sample recovery, it is recommended that the HydraSleeve be placed in the well so that the bottom weight rests on the bottom of the well and the top of the HydraSleeve is as close to the bottom of the well screen as possible. This should allow the sampler to fill before the top of the device reaches the top of the screen as it is pulled up through the water column, and ensure that only water from the screen is collected as the sample. In short-screen wells, or wells with a short water column, it may be necessary to use a top-weight on the HydraSleeve to compress it in the bottom of the well so that, when it is recovered, it has room to fill before it reaches the top of the screen.

### Example

2" ID PVC well, 50' total depth, 10' screen at the bottom of the well, with water level above the screen (the entire screen contains water).

*Correct Placement (figure 2):* Using a standard HydraSleeve for a 2" well (2.6" flat width/1.5" filled OD x 30" long, 650 ml volume), deploy the sampler so the weight (an 8 oz., 4"-long weight with a 2"-long clip) rests at the bottom of the well. The top of the sleeve is thus set at about 36" above the bottom of the well. When the sampler is recovered, it will be pulled upward approximately 30" to 45" before it is filled; therefore, it is full (and the top check valve closes) at approximately 66" (5 ½ feet) to 81" (6 ¾ feet) above the bottom of the well, which is well before the sampler reaches the top of the screen. In this example, only water from the screen is collected as a sample.

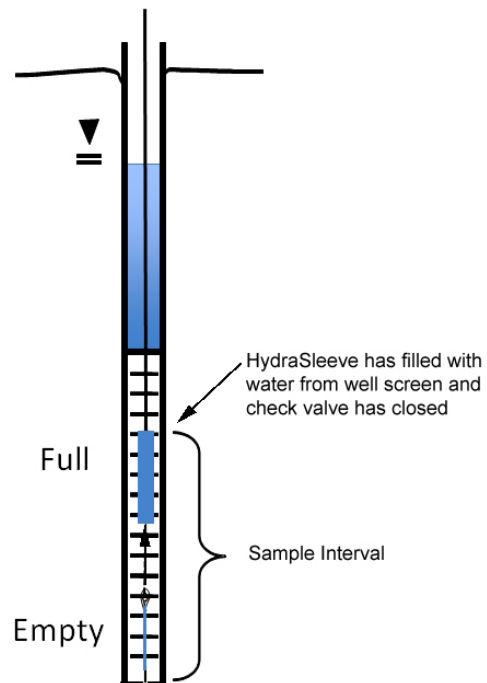


Figure 2. Correct placement of HydraSleeve.



*Incorrect Placement (figure 3):* If the well screen in this example was only 5' long, and the HydraSleeve was placed as above, it would not fill before the top of the device reached the top of the well screen, so the sample would include water from above the screen, which may not have the same chemistry.

*The solution?* Deploy the HydraSleeve with a top weight, so that it is collapsed to within 6" to 9" of the bottom of the well. When the HydraSleeve is recovered, it will fill within 39" (3 ¼ feet) to 54" (4 ½ feet) above the bottom of the well, or just before the sampler reaches the top of the screen, so it collects only water from the screen as the sample.

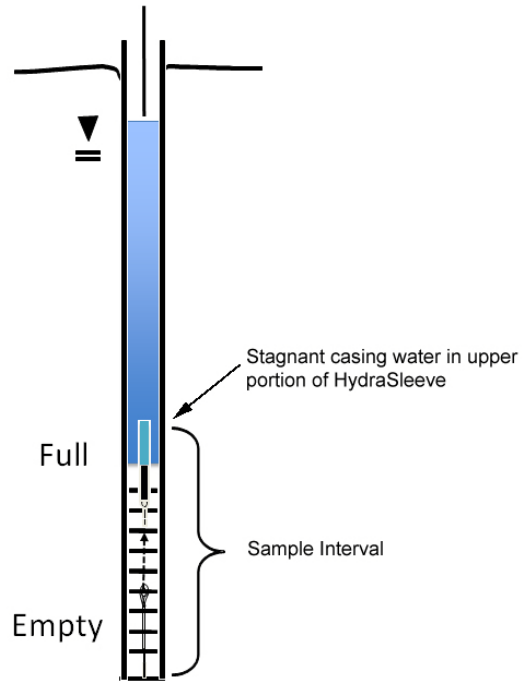


Figure 3. Incorrect placement of HydraSleeve.

This example illustrates one of many types of HydraSleeve placements. More complex placements are discussed in a later section.

## Procedures for Sampling with the HydraSleeve

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Collecting a ground-water sample with a HydraSleeve is a simple one-person operation.

**Note:** Before deploying the HydraSleeve in the well, collect the depth-to-water measurement that you will use to determine the preferred position of the HydraSleeve in the well. This measurement may also be used with measurements from other wells to create a ground-water contour map. If necessary, also measure the depth to the bottom of the well to verify actual well depth to confirm your decision on placement of the HydraSleeve in the water column.

Measure the correct amount of tether needed to suspend the HydraSleeve in the well so that the weight will rest on the bottom of the well (or at your preferred position in the well). Make sure to account for the need to leave a few feet of tether at the top of the well to allow recovery of the sleeve

**Note:** Always wear sterile gloves when handling and discharging the HydraSleeve.

### I. Assembling the HydraSleeve

1. Remove the HydraSleeve from its packaging, unfold it, and hold it by its top.
2. Crimp the top of the HydraSleeve by folding the hard polyethylene reinforcing strips at the holes.
3. Attach the spring clip to the holes to ensure that the top will remain open until the sampler is retrieved.
4. Attach the tether to the spring clip by tying a knot in the tether.

**Note:** Alternatively, attach the tether to one (NOT both) of the holes at the top of the Hydrasleeve by tying a knot in the tether.

5. Fold the flaps with the two holes at the bottom of the HydraSleeve together and slide the weight clip through the holes.
6. Attach a weight to the bottom of the weight clip to ensure that the HydraSleeve will descend to the bottom of the well.

## II. Deploying the HydraSleeve

1. Using the tether, carefully lower the HydraSleeve to the bottom of the well, or to your preferred depth in the water column

During installation, hydrostatic pressure in the water column will keep the self-sealing check valve at the top of the HydraSleeve closed, and ensure that it retains its flat, empty profile for an indefinite period prior to recovery.

**Note:** Make sure that it is not pulled upward at any time during its descent. If the HydraSleeve is pulled upward at a rate greater than 0.5'/second at any time prior to recovery, the top check valve will open and water will enter the HydraSleeve prematurely.

2. Secure the tether at the top of the well by placing the well cap on the top of the well casing and over the tether.

**Note:** Alternatively, you can tie the tether to a hook on the bottom of the well cap (you will need to leave a few inches of slack in the line to avoid pulling the sampler up as the cap is removed at the next sampling event).

## III. Equilibrating the Well

The equilibration time is the time it takes for conditions in the water column (primarily flow dynamics and contaminant distribution) to restabilize after vertical mixing occurs (caused by installation of a sampling device in the well).

- Situation: The HydraSleeve is deployed for the first time or for only one time in a well

The HydraSleeve is very thin in cross section and displaces very little water (<100 ml) during deployment so, unlike most other sampling devices, it does not disturb the water column to the point at which long equilibration times are necessary to ensure recovery of a representative sample.

In most cases, the HydraSleeve can be recovered immediately (with no equilibration time) or within a few hours. In regulatory jurisdictions that impose specific requirements for equilibration times prior to recovery of no-purge sampling devices, these requirements should be followed.

- Situation: The HydraSleeve is being deployed for recovery during a future sampling event

In periodic (i.e., quarterly or semi-annual) sampling programs, the sampler for the current sampling event can be recovered and a new sampler (for the next sampling event)

deployed immediately thereafter, so the new sampler remains in the well until the next sampling event.

Thus, a long equilibration time is ensured and, at the next sampling event, the sampler can be recovered immediately. This means that separate mobilizations, to deploy and then to recover the sampler, are not required. HydraSleeves can be left in a well for an indefinite period of time without concern.

#### **IV. HydraSleeve Recovery and Sample Collection**

1. Hold on to the tether while removing the well cap.
2. Secure the tether at the top of the well while maintaining tension on the tether (but without pulling the tether upwards)
3. Measure the water level in the well.
4. In one smooth motion, pull the tether up between 30” to 45” (36” to 54” for the longer HydraSleeve) at a rate of about 1’ per second (or faster).

The motion will open the top check valve and allow the HydraSleeve to fill (it should fill in about 1 to 1.5 times the length of the HydraSleeve). This is analogous to coring the water column in the well from the bottom up.

When the HydraSleeve is full, the top check valve will close. You should begin to feel the weight of the HydraSleeve on the tether and it will begin to displace water. The closed check valve prevents loss of sample and entry of water from zones above the well screen as the HydraSleeve is recovered.

5. Continue pulling the tether upward until the HydraSleeve is at the top of the well.
6. Decant and discard the small volume of water trapped in the Hydrasleeve above the check valve by turning the sleeve over.

#### **V. Sample Collection**

**Note:** Sample collection should be done immediately after the HydraSleeve has been brought to the surface to preserve sample integrity.

1. Remove the discharge tube from its sleeve.
2. Hold the HydraSleeve at the check valve.
3. Puncture the HydraSleeve just below the check valve with the pointed end of the discharge tube
4. Discharge water from the HydraSleeve into your sample containers.

Control the discharge from the HydraSleeve by either raising the bottom of the sleeve, by squeezing it like a tube of toothpaste, or both.

5. Continue filling sample containers until all are full.

## Measurement of Field Indicator Parameters

Field indicator parameter measurement is generally done during well purging and sampling to confirm when parameters are stable and sampling can begin. Because no-purge sampling does not require purging, field indicator parameter measurement is not necessary for the purpose of confirming when purging is complete.

If field indicator parameter measurement is required to meet a specific non-purging regulatory requirement, it can be done by taking measurements from water within a HydraSleeve that is not used for collecting a sample to submit for laboratory analysis (i.e., a second HydraSleeve installed in conjunction with the primary sample collection HydraSleeve [see Multiple Sampler Deployment below]).

## Alternate Deployment Strategies

### Deployment in Wells with Limited Water Columns

For wells in which only a limited water column exists to be sampled, the HydraSleeve can be deployed with an optional top weight instead of a bottom weight, which collapses the HydraSleeve to a very short (approximately 6" to 9") length, and allows the HydraSleeve to fill in a water column only 36" to 45" in height.

### Multiple Sampler Deployment

Multiple sampler deployment in a single well screen can accomplish two purposes:

- It can collect additional sample volume to satisfy site or laboratory-specific sample volume requirements.
- It can accommodate the need for collecting field indicator parameter measurements.
- It can be used to collect samples from multiple intervals in the screen to allow identification of possible contaminant stratification.

It is possible to use up to 3 standard 30” HydraSleeves deployed in series along a single tether to collect samples from a 10’ long well screen without collecting water from the interval above the screen.

The samplers must be attached to the tether at both the top and bottom of the sleeve. Attach the tether at the top with a stainless-steel clip (available from the manufacturer). Attach the tether at the bottom using a cable tie. The samplers must be attached as follows (figure 4):

- The first (attached to the tether as described above, with the weight at the bottom) at the bottom of the screen
- The second attached immediately above the first
- The third (attached the same as the second) immediately above the second

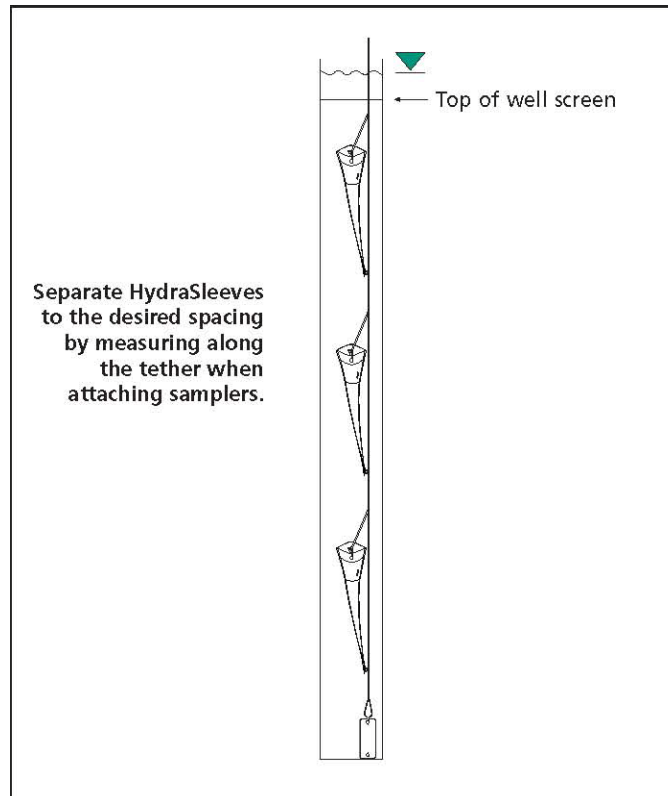


Figure 4. Multiple HydraSleeve deployment.

Alternately, the first sampler can be attached to the tether as described above, a second attached to the bottom of the first using a short length of tether (in place of the weight), and the third attached to the bottom of the second in the same manner, with the weight attached to the bottom of the third sampler (figure 5).

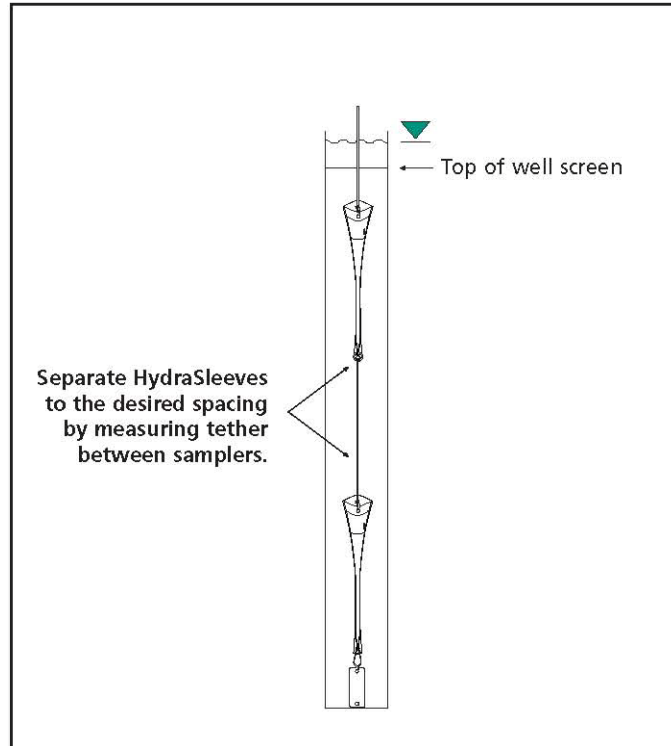


Figure 5. Alternative method for deploying multiple HydraSleeves.

In either case, when attaching multiple HydraSleeves in series, more weight may be required to hold the samplers in place in the well than would be required with a single sampler. Recovery of multiple samplers and collection of samples is done in the same manner as for single sampler deployments.

## **Post-Sampling Activities**

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The recovered HydraSleeve and the sample discharge tubing should be disposed as per the solid waste management plan for the site. To prepare for the next sampling event, a new HydraSleeve can be deployed in the well (as described previously) and left in the well until the next sampling event, at which time it can be recovered.

The weight and weight clip can be reused on this sampler after they have been thoroughly cleaned as per the site equipment decontamination plan. The tether may be dedicated to the well and reused or discarded at the discretion of sampling personnel.



## References

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McAlary, T. A. and J. F. Barker, 1987, Volatilization Losses of Organics During Ground-Water Sampling From Low-Permeability Materials, Ground-Water Monitoring Review, Vol. 7, No. 4, pp. 63-68

Parsons, 2005, Results Report for the Demonstration of No-Purge Ground-Water Sampling Devices at Former McClellan Air Force Base, California; Contract F44650-99-D-0005, Delivery Order DKO1, U.S. Army Corps of Engineers (Omaha District), U.S. Air Force Center for Environmental Excellence, and U.S. Air Force Real Property Agency

Robin, M. J. L. and R. W. Gillham, 1987, Field Evaluation of Well Purging Procedures, Ground-Water Monitoring Review, Vol. 7, No. 4, pp. 85-93

# ATTACHMENT 2

Field Data Sheets



## WELL GAUGING DATA

Project # 160929-KT1 Date 9.29.16 Client Aracelis

Site 4280 Foothill Blvd. OAKLAND, CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or <u>TOC</u>	Notes
MW-2	0926	2					DRY	13.16		
MW-3	0935	4					13.57	31.32		
MW-4	0940	4					19.36	26.60		
MW-5	0953	4	Strong ODOR	12.58			12.65	3'		
MW-6	0930	4					19.52	34.41		
MW-7	0945	6					13.81	35.21		
MW-8		2								Parked over 1st.
MW-9	0920	2					13.74	29.45		
MW-10	0956	4	Strong ODOR	12.16			12.17			
MW-11	0949	4					12.43	29.94		
MW-12	1000	4	Slight ODOR	12.50			12.53			

## BP WELL MONITORING DATA SHEET

Project #: 16022a-RTT	Station #: 1110a
Sampler: KT	Date: 9.29.16
Well I.D.: MW-3	Well Diameter: 2 3 (4) 6 8
Total Well Depth: 31.32	Depth to Water: 13.57
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method:	Sampling Method:	Instruments Used:
Bailer	Waterra	Myton L Ultrameter
Disposable Bailer	Peristaltic	HACH Turbiditymeter
Positive Air Displacement	Extraction Pump	Durham Geoslope Indicator
Electric Submersible	Extraction Port	YSI 556 Flow-Thru Cell
Other: No Pyg2	Dedicated Tubing	GeoTech Interface Probe
	Other: Hydrasleeve	YSI 550 DO Meter
		MMC Interface Probe
		Other: _____

Model #:	Pump Depth: _____																			
$\frac{\text{(Gals.) X}}{\text{Specified Volumes}} = \frac{\text{Gals.}}{\text{Calculated Volume}}$		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>			Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier																	
1"	0.04	4"	0.65																	
2"	0.16	6"	1.47																	
3"	0.37	Other	radius <sup>2</sup> * 0.163																	

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
1040	67.7	6.53	731	31		clear / 13.57
1045	- Replaced		Hydrasleeve			

Did well dewater? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Gallons actually evacuated: _____	
Sampling Date: 9.29.16	Sampling Time: 1040	Depth to Water: 13.57
Sample I.D.: MW-3	Laboratory: Calscience	Other: ESK
Analyzed for: GRO BTEX OXYS. ETHANOL	Other: See COC	
Duplicate I.D.:	Analyzed for: GRO BTEX OXYS ETHANOL Other:	
D.O. (if req'd):	Pre-purge: _____ mg/L	Post-purge: 0.42 mg/L
O.R.P. (if req'd):	Pre-purge: _____ mV	Post-purge: _____ mV

## BP WELL MONITORING DATA SHEET

Project #: 160929-KT1	Station #: 11109
Sampler: KT	Date: 9.29.16
Well I.D.: MW-4	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth: 26.60	Depth to Water: 19.36
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Referenced to: <u>PVC</u> Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: _____	

<b>Purge Method:</b> Bailer _____ Disposable Bailer _____ Positive Air Displacement _____ Electric Submersible _____ Other: <u>NO Purge</u>	<b>Sampling Method:</b> Waterra _____ Peristaltic _____ Extraction Pump _____ Dedicated Tubing _____ Other: <u>Hydrasleeve</u>	<b>Instruments Used:</b> Myron L Ultrameter _____ Durham Geoslope Indicator _____ GeoTech Interface Probe _____ MMC Interface Probe _____ HACH Turbidimeter _____ YSI 556 Flow-Thru Cell _____ YSI 550 DO Meter _____ Other: _____
--	---	--

Model #: \_\_\_\_\_ Pump Depth: \_\_\_\_\_

_____ (Gals.) X _____	= _____ Gals.	
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
1055	68.1	6.25	779	13	—	Clear / 19.36
1100	Replaced		Hydrasleeve		—	0005

Did well dewater? Yes  No  Gallons actually evacuated: \_\_\_\_\_

Sampling Date: 9.29.16 Sampling Time: 1055 Depth to Water: 19.36

Sample I.D.: MW-4 Laboratory: Calscience Other ESK

Analyzed for: GRO BTEX OXYS. ETHANOL Other: See COC

Duplicate I.D.: \_\_\_\_\_ Analyzed for: GRO BTEX OXYS ETHANOL Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.89 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

## BP WELL MONITORING DATA SHEET

Project #: 160929-KT1	Station #: 11109
Sampler: KT	Date: 9.29.16
Well I.D.: MW-6	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth: 34.41	Depth to Water: 19.12
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Referenced to: <u>PVC</u> Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: _____	

Purge Method:	Sampling Method:	Instruments Used:
Bailer	Waterra	Myron L Ultrameter
Disposable Bailer	Peristaltic	HACH Turbiditymeter
Positive Air Displacement	Extraction Pump	Durham Geoslope Indicator
Electric Submersible	Extraction Port	YSI 556 Flow-Thru Cell
Other: <u>No Purge</u>	Dedicated Tubing	GeoTech Interface Probe
	Other: <u>Hydra sleeve</u>	YSI 550 DO Meter
		MMC Interface Probe
		Other: _____

Model #: \_\_\_\_\_ Pump Depth: \_\_\_\_\_

_____ (Gals.) X _____	= _____ Gals.	
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
1015	63.7	6.12	610	11		
1020	—	Replaced Hydra sleeve			—	

Did well dewater? Yes  No  Gallons actually evacuated: \_\_\_\_\_

Sampling Date: 9.29.16      Sampling Time: 1015      Depth to Water: 19.12

Sample I.D.: MW-6      Laboratory: Calscience      Other: ESK

Analyzed for: GRO BTEX OXYS. ETHANOL      Other: See Cc

Duplicate I.D.: \_\_\_\_\_      Analyzed for: GRO BTEX OXYS ETHANOL Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge: _____ mg/L	Post-purge: 0.81 mg/L
------------------	-----------------------	-----------------------

O.R.P. (if req'd):	Pre-purge: _____ mV	Post-purge: _____ mV
--------------------	---------------------	----------------------

## BP WELL MONITORING DATA SHEET

Project #: 160929-KT7	Station #: 11109
Sampler: KT	Date: 9.29.16
Well I.D.: MW-7	Well Diameter: 2 3 4 <u>6</u> 8
Total Well Depth: 33.21	Depth to Water: 13.81
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Referenced to: <u>PVC</u> Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method:	Sampling Method:	Instruments Used:
Bailer	Water	Myron L Ultrameter
Disposable Bailer	Peristaltic	HACH Turbidimeter
Positive Air Displacement	Extraction Pump	Durham Geoslope Indicator
Electric Submersible	Extraction Port	YSI 556 Flow-Thru Cell
Other: <u>No Purge</u>	Dedicated Tubing	GeoTech Interface Probe
	Other: <u>Hydra sleeve</u>	YSI 550 DO Meter
		MMC Interface Probe
		Other: _____

Model #: \_\_\_\_\_ Pump Depth: \_\_\_\_\_

(Gals.) X _____ = _____ Gals.
1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
1115	67.1	6.72	704	6		clear/odor/13.81
1120	<del>Replaced</del> Replaced Hydra sleeve					

Did well dewater?      Yes      No      Gallons actually evacuated: \_\_\_\_\_

Sampling Date: 9.29.16      Sampling Time: 1115      Depth to Water: 13.81

Sample I.D.: MW-7      Laboratory: Calscience      Other: ESK

Analyzed for: GRO BTEX OXYS. ETHANOL      Other: Spe Coc

Duplicate I.D.: \_\_\_\_\_      Analyzed for: GRO BTEX OXYS ETHANOL      Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge: _____ mg/L	Post-purge: 1.41 mg/L
------------------	-----------------------	-----------------------

O.R.P. (if req'd):	Pre-purge: _____ mV	Post-purge: _____ mV
--------------------	---------------------	----------------------

## BP WELL MONITORING DATA SHEET

Project #: 160929.KT1	Station #: 11109
Sampler: KT	Date: 9.29.16
Well I.D.: MW-11	Well Diameter: 2 3 <u>(4)</u> 6 8
Total Well Depth: 29.94	Depth to Water: 12.43
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Referenced to: <u>(PVC)</u> Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: _____	

**Purge Method:**

Bailer  
 Disposable Bailer  
 Positive Air Displacement  
 Electric Submersible  
 Other: No Purge

**Sampling Method:**

Bailer  
 Disposable Bailer  
 Extraction Port  
 Dedicated Tubing  
 Other: Hydrasteeve

**Instruments Used:**

Myron L Ultrameter  
 Durham Geoslope Indicator  
 GeoTech Interface Probe  
 MMC Interface Probe  
 HACH Turbiditymeter  
 YSI 556 Flow-Thru Cell  
 YSI 550 DO Meter  
 Other: \_\_\_\_\_

Model #: \_\_\_\_\_ Pump Depth: \_\_\_\_\_

_____ (Gals.) X _____	= _____ Gals.	
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
1135	71.1	6.00	961	65		
1140	_____	<u>REPLACED HYDRASLEEVE</u>				

Did well dewater? Yes  No  Gallons actually evacuated: \_\_\_\_\_

Sampling Date: ~~AAW-11~~ 9.29.16 Sampling Time: 1135 Depth to Water: 12.43

Sample I.D.: MW-11 Laboratory: Calscience Other ESK

Analyzed for: GRO BTEX OXYS ETHANOL Other: See CoC

Duplicate I.D.: \_\_\_\_\_ Analyzed for: GRO BTEX OXYS ETHANOL Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.74	mg/L
------------------	------------	------	-------------	------	------

O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV
--------------------	------------	----	-------------	----



# WELLHEAD INSPECTION CHECKLIST

Client \_\_\_\_\_ Date 9.29.14

Site Address 4280 Foothill Blvd . OAKland

Job Number 160929-KT1 Technician KT

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-2	✓							
MW-3	✓							
MW-4	✓							
MW-5	✓							
MW-6	✓							
MW-7	✓							
MW-8								
MW-9	✓							
MW-10	✓							
MW-11	✓							
MW-12	✓							

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



# ATTACHMENT 3

Laboratory Report and Chain-of-Custody Documentation



## ARCADIS US - San Francisco, CA

Sample Delivery Group: L863581  
Samples Received: 10/04/2016  
Project Number: GP09BPNA.C106  
Description: CA-11109 - GP09BPNA.C106  
Site: 4280 FOOTHILL, OAKLAND  
Report To: Hollis Phillips  
100 Montgomery Street  
Suite 300  
San Francisco, CA 94104

Entire Report Reviewed By:



Brian Ford  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



<b><sup>1</sup>Cp: Cover Page</b>	<b>1</b>
<b><sup>2</sup>Tc: Table of Contents</b>	<b>2</b>
<b><sup>3</sup>Ss: Sample Summary</b>	<b>3</b>
<b><sup>4</sup>Cn: Case Narrative</b>	<b>4</b>
<b><sup>5</sup>Sr: Sample Results</b>	<b>5</b>
MW-3 L863581-01	5
MW-4 L863581-02	6
MW-6 L863581-03	7
MW-7 L863581-04	8
MW-11 L863581-05	9
<b><sup>6</sup>Qc: Quality Control Summary</b>	<b>10</b>
Volatile Organic Compounds (GC) by Method 8015	10
Volatile Organic Compounds (GC/MS) by Method 8260B	11
<b><sup>7</sup>Gl: Glossary of Terms</b>	<b>14</b>
<b><sup>8</sup>Al: Accreditations &amp; Locations</b>	<b>15</b>
<b><sup>9</sup>Sc: Chain of Custody</b>	<b>16</b>



# SAMPLE SUMMARY



## MW-3 L863581-01 GW

Collected by Kevin Thompson    Collected date/time 09/29/16 10:40    Received date/time 10/04/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG915375	1	10/10/16 17:14	10/10/16 17:14	BMB

1  
Cp

2  
Tc

3  
Ss

## MW-4 L863581-02 GW

Collected by Kevin Thompson    Collected date/time 09/29/16 10:55    Received date/time 10/04/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG914110	1	10/05/16 14:23	10/05/16 14:23	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG915375	1	10/10/16 17:36	10/10/16 17:36	BMB

4  
Cn

5  
Sr

6  
Qc

## MW-6 L863581-03 GW

Collected by Kevin Thompson    Collected date/time 09/29/16 10:15    Received date/time 10/04/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG915375	1	10/10/16 17:58	10/10/16 17:58	BMB

7  
Gl

8  
Al

## MW-7 L863581-04 GW

Collected by Kevin Thompson    Collected date/time 09/29/16 11:15    Received date/time 10/04/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG914110	1	10/06/16 02:58	10/06/16 02:58	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG915365	1	10/13/16 13:08	10/13/16 13:08	DWR

9  
Sc

## MW-11 L863581-05 GW

Collected by Kevin Thompson    Collected date/time 09/29/16 11:35    Received date/time 10/04/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG914110	5	10/06/16 03:27	10/06/16 03:27	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG915365	20	10/11/16 17:18	10/11/16 17:18	DWR



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford  
Technical Service Representative

- <sup>1</sup> Cp
- <sup>2</sup> Tc
- <sup>3</sup> Ss
- <sup>4</sup> Cn
- <sup>5</sup> Sr
- <sup>6</sup> Qc
- <sup>7</sup> Gl
- <sup>8</sup> Al
- <sup>9</sup> Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Methyl tert-butyl ether	1.41		0.367	1.00	1	10/10/2016 17:14	<a href="#">WG915375</a>
(S) Toluene-d8	103			90.0-115		10/10/2016 17:14	<a href="#">WG915375</a>
(S) Dibromofluoromethane	93.4			79.0-121		10/10/2016 17:14	<a href="#">WG915375</a>
(S) 4-Bromofluorobenzene	98.6			80.1-120		10/10/2016 17:14	<a href="#">WG915375</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc





Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TPHG C5 - C12	1300		30.4	100	1	10/05/2016 14:23	<a href="#">WG914110</a>
(S) a,a,a-Trifluorotoluene(FID)	94.5			62.0-128		10/05/2016 14:23	<a href="#">WG914110</a>

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Methyl tert-butyl ether	14.6		0.367	1.00	1	10/10/2016 17:36	<a href="#">WG915375</a>
(S) Toluene-d8	102			90.0-115		10/10/2016 17:36	<a href="#">WG915375</a>
(S) Dibromofluoromethane	93.8			79.0-121		10/10/2016 17:36	<a href="#">WG915375</a>
(S) 4-Bromofluorobenzene	94.1			80.1-120		10/10/2016 17:36	<a href="#">WG915375</a>

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Methyl tert-butyl ether	1.93		0.367	1.00	1	10/10/2016 17:58	<a href="#">WG915375</a>
(S) Toluene-d8	101			90.0-115		10/10/2016 17:58	<a href="#">WG915375</a>
(S) Dibromofluoromethane	93.9			79.0-121		10/10/2016 17:58	<a href="#">WG915375</a>
(S) 4-Bromofluorobenzene	97.4			80.1-120		10/10/2016 17:58	<a href="#">WG915375</a>

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



## Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TPHG C5 - C12	1400		30.4	100	1	10/06/2016 02:58	<a href="#">WG914110</a>
(S) a,a,a-Trifluorotoluene(FID)	89.6			62.0-128		10/06/2016 02:58	<a href="#">WG914110</a>

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Benzene	3.78		0.331	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
Ethylbenzene	0.768	J	0.384	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
Toluene	U		0.780	5.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
Xylenes, Total	1.43	J	1.06	3.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
1,2-Dibromoethane	U		0.381	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
1,2-Dichloroethane	U		0.361	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
Di-isopropyl ether	U		0.320	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
Ethanol	U		42.0	100	1	10/13/2016 13:08	<a href="#">WG915365</a>
Ethyl tert-butyl ether	U		0.270	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
Methyl tert-butyl ether	3.18		0.367	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
tert-Butyl alcohol	7.41		2.40	5.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
tert-Amyl Methyl Ether	U		0.260	1.00	1	10/13/2016 13:08	<a href="#">WG915365</a>
(S) Toluene-d8	101			90.0-115		10/13/2016 13:08	<a href="#">WG915365</a>
(S) Dibromofluoromethane	102			79.0-121		10/13/2016 13:08	<a href="#">WG915365</a>
(S) 4-Bromofluorobenzene	94.2			80.1-120		10/13/2016 13:08	<a href="#">WG915365</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TPHG C5 - C12	9380		152	500	5	10/06/2016 03:27	<a href="#">WG914110</a>
(S) a,a,a-Trifluorotoluene(FID)	90.5			62.0-128		10/06/2016 03:27	<a href="#">WG914110</a>

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Benzene	244	J3	6.62	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
Ethylbenzene	173	J3	7.68	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
Toluene	73.0	J J3	15.6	100	20	10/11/2016 17:18	<a href="#">WG915365</a>
Xylenes, Total	319	J3	21.2	60.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
1,2-Dibromoethane	U	J3	7.62	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
1,2-Dichloroethane	U	J3	7.22	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
Di-isopropyl ether	U	J3	6.40	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
Ethanol	U		840	2000	20	10/11/2016 17:18	<a href="#">WG915365</a>
Ethyl tert-butyl ether	U		5.40	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
Methyl tert-butyl ether	U	J3	7.34	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
tert-Butyl alcohol	U		48.0	100	20	10/11/2016 17:18	<a href="#">WG915365</a>
tert-Amyl Methyl Ether	U		5.20	20.0	20	10/11/2016 17:18	<a href="#">WG915365</a>
(S) Toluene-d8	99.8			90.0-115		10/11/2016 17:18	<a href="#">WG915365</a>
(S) Dibromofluoromethane	84.8			79.0-121		10/11/2016 17:18	<a href="#">WG915365</a>
(S) 4-Bromofluorobenzene	103			80.1-120		10/11/2016 17:18	<a href="#">WG915365</a>

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3168827-3 10/05/16 11:59

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
TPHG C5 - C12	U		30.4	100
<i>(S) a,a,a-Trifluorotoluene(FID)</i>	101			62.0-128

1 Cp

2 Tc

3 Ss

4 Cn

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3168827-1 10/05/16 10:31 • (LCSD) R3168827-2 10/05/16 11:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
TPHG C5 - C12	5500	5750	5130	105	93.2	64.0-125			11.5	20
<i>(S) a,a,a-Trifluorotoluene(FID)</i>				99.5	99.4	62.0-128				

5 Sr

6 Qc

L863581-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L863581-02 10/05/16 14:23 • (MS) R3168827-4 10/05/16 14:52 • (MSD) R3168827-5 10/06/16 05:50

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
TPHG C5 - C12	5500	1300	6260	5290	90.2	72.6	1	45.1-139			16.8	20
<i>(S) a,a,a-Trifluorotoluene(FID)</i>					98.0	99.2		62.0-128				

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3169739-4 10/11/16 11:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
1,2-Dibromoethane	U		0.381	1.00
1,2-Dichloroethane	U		0.361	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Ethanol	U		42.0	100
Methyl tert-butyl ether	U		0.367	1.00
Toluene	U		0.780	5.00
Xylenes, Total	U		1.06	3.00
tert-Amyl Methyl Ether	U		0.260	1.00
Ethyl tert-butyl ether	U		0.270	1.00
tert-Butyl alcohol	U		2.40	5.00
(S) Toluene-d8	99.2			90.0-115
(S) Dibromofluoromethane	84.9			79.0-121
(S) 4-Bromofluorobenzene	103			80.1-120

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3169739-1 10/11/16 09:34 • (LCSD) R3169739-2 10/11/16 09:57

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	23.0	22.8	91.8	91.2	73.0-122			0.630	20
1,2-Dibromoethane	25.0	27.7	28.3	111	113	79.8-122			2.26	20
1,2-Dichloroethane	25.0	21.5	21.8	86.1	87.0	65.3-126			1.10	20
Di-isopropyl ether	25.0	22.9	23.1	91.5	92.5	65.1-135			1.04	20
Ethylbenzene	25.0	25.2	25.5	101	102	80.9-121			1.24	20
Methyl tert-butyl ether	25.0	22.8	22.7	91.0	90.7	70.1-125			0.340	20
Toluene	25.0	24.6	24.7	98.2	98.7	77.9-116			0.440	20
Xylenes, Total	75.0	75.5	77.0	101	103	79.2-122			1.99	20
(S) Toluene-d8				99.9	99.7	90.0-115				
(S) Dibromofluoromethane				87.8	87.0	79.0-121				
(S) 4-Bromofluorobenzene				101	102	80.1-120				



L863581-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L863581-05 10/11/16 17:18 • (MS) R3169739-5 10/11/16 17:41 • (MSD) R3169739-6 10/11/16 18:04

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	25.0	244	617	786	74.6	108	20	58.6-133		J3	24.1	20
1,2-Dibromoethane	25.0	U	392	632	78.5	126	20	73.8-131		J3	46.7	20
1,2-Dichloroethane	25.0	U	303	474	60.7	94.9	20	60.7-132		J3	43.9	20
Di-isopropyl ether	25.0	U	349	543	69.7	109	20	59.9-140		J3	43.6	20
Ethylbenzene	25.0	173	582	783	81.9	122	20	62.7-136		J3	29.4	20
Methyl tert-butyl ether	25.0	U	334	529	66.9	106	20	61.4-136		J3	45.2	20
Toluene	25.0	73.0	450	645	75.4	114	20	67.8-124		J3	35.6	20
Xylenes, Total	75.0	319	1480	2100	77.7	119	20	65.6-133		J3	34.6	20
<i>(S) Toluene-d8</i>					98.9	99.9		90.0-115				
<i>(S) Dibromofluoromethane</i>					85.4	85.9		79.0-121				
<i>(S) 4-Bromofluorobenzene</i>					102	101		80.1-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3170141-3 10/10/16 11:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Methyl tert-butyl ether	U		0.367	1.00
(S) Toluene-d8	103			90.0-115
(S) Dibromofluoromethane	95.3			79.0-121
(S) 4-Bromofluorobenzene	98.2			80.1-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170141-1 10/10/16 09:59 • (LCSD) R3170141-2 10/10/16 10:21

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Methyl tert-butyl ether	25.0	18.2	19.3	72.9	77.0	70.1-125			5.54	20
(S) Toluene-d8				103	104	90.0-115				
(S) Dibromofluoromethane				91.4	94.4	79.0-121				
(S) 4-Bromofluorobenzene				97.5	96.2	80.1-120				

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc





Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.  
 \* Not all certifications held by the laboratory are applicable to the results reported in the attached report.



## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

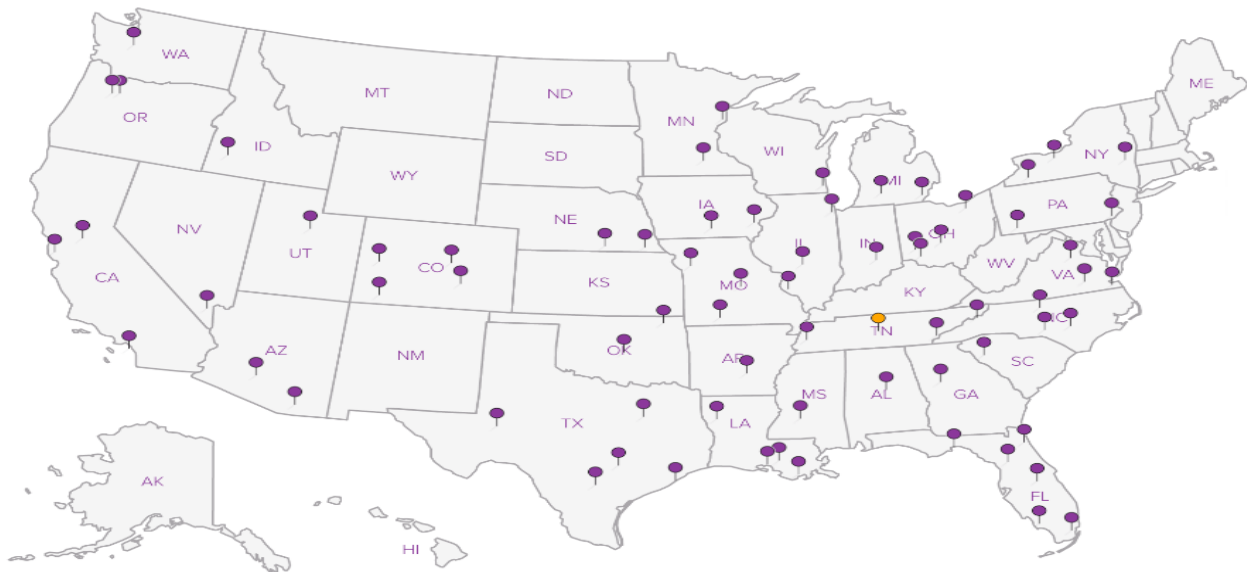
## Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>n/a</sup> Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



### Chain of Custody Record

ARCADIS Project Name: CA 11109

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes    No    x   

Lab Work Order Number: 1863581

Lab Name: ESC Lab Sciences	Facility Address: 4280 Foothill Blvd.	Consultant/Contractor: Blaine Tech Services, Inc.
Lab Address: 12605 Lebenon Rd., Mt. Juliet, TN 37122	City, State, ZIP Code: Oakland, CA	Blaine Tech Project No: ARCADIS/BP-11109
Lab PM: Jared Willis	Lead Regulatory Agency: Alameda County Env. Health Svcs	Consultant/Contractor Address: 1680 Rogers Ave., San Jose, CA 95112
Lab Phone: 925.484.19 605.773.9678	California Global ID No.: T0600100217	Consultant/Contractor PM: Michael Ninokata
Lab Shipping Accont:	ARCADIS Project No: GP09BPNA.C106	Phone: 408.573.0555 x202
Lab Bottle Order No:	ARCADIS PM/ Phone: Jamey Peterson	Email EDD To: <a href="mailto:jamey.peterson@arcadis.com">jamey.peterson@arcadis.com</a>
Other Info:	Email: <a href="mailto:jamey.peterson@arcadis.com">jamey.peterson@arcadis.com</a>	Invoice To: ARCADIS <u>  </u> Contractor <u>      </u>

(5) Fule Oxys include: MTBE, TBA, TAME, ETBE, DIPE

				Matrix			No. Containers / Preservative						Requested Analyses					Report Type & QC Level								
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	GRO 8260B	BTEX 8260B	MTBE 8260B	(5) Oxygenates 8260E	1,2-DCA, EDB 8260B	Ethanol 8260B	Standard <u>  </u> Full Data Package <u>      </u>	C177	Comments					
	MW-3	9-29-16	1040								X				X										-01	
	MW-4	}	1055								X		X		X										-02	
	MW-6		1015								X			X												-03
	MW-7		1115								X		X	X		X	X	X								-04
	MW-11		1135								X		X	X		X	X	X								
	TB-11109-092916		1150											X	X	X	X	X								-05
																									GN Hold	

Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name: <u>Kevin Thompson</u>	Relinquished By / Affiliation: <u>[Signature]</u>	Date: <u>9-29-16</u> Time: <u>1600</u>
Sampler's Company: <u>BTS</u>	Accepted By / Affiliation: <u>[Signature] (Sample Custodian)</u>	Date: <u>9/29/16</u> Time: <u>1600</u>
Shipment Method: <u>Fed-tr</u> Ship Date: <u>10/3/16</u>	<u>[Signature] (Sample Custodian)</u>	Date: <u>10-1-16</u> Time: <u>900</u>
Shipment Tracking No:		

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No \_\_\_\_\_ Temp Blank: Yes / No \_\_\_\_\_ Cooler Temp on Receipt: 3.2 °F/C \_\_\_\_\_ Trip Blank: Yes / No \_\_\_\_\_ MS/MSD Sample Submitted: Yes / No \_\_\_\_\_

*GNW* *CC*



Cooler Receipt Form					
Client:	ARCADIS BP	SDG#	6863581		
Cooler Received/Opened On	10/ 4/16	Temperature Upon Receipt:	3.2 °c		
Received By: Joseph Roberts					
Signature: <i>Joseph R.</i>					
Receipt Check List			Yes	No	N/A
Were custody seals on outside of cooler and intact?					✓
Were custody papers properly filled out?			✓		
Did all bottles arrive in good condition?			✓		
Were correct bottles used for the analyses requested?			✓		
Was sufficient amount of sample sent in each bottle?			✓		
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			✓		
If applicable, was an observable VOA headspace present?				✓	
Non Conformance Generated. (If yes see attached NCF)					