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January 31, 2017

Mr. Keith Nowell
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: 4Q16 Quarterly Summary Report
Site: 76 Station No. 5191/5043
449 Hegenberger Road
Oakland, California
Fuel Leak Case No. RO0000219

Dear Mr. Nowell;

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

If you have any questions or need additional information, please call:

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Sincerely,

United Pacific



WALTER SPRAGUE
Director of Retail Services

Attachment: Antea Group's Quarterly Summary Report, Fourth Quarter 2016 dated January 31, 2017

Quarterly Summary Report, Fourth Quarter 2016

*76 Station No. 5191/5043
449 Hegenberger Road
Oakland, California*

*Alameda County Health Care Services
Agency Fuel Leak Case No. RO0000219*

*San Francisco Bay, Regional Water Quality
Control Board Case No. 01-1601*

GeoTracker Global ID No. T0600101476

*Antea Group Project No. I42705191
January 31, 2016*

Prepared for:
Mr. Keith Nowell
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Quarterly Summary Report, Fourth Quarter 2016

76 Station No. 5191/5043
449 Hegenberger Road
Oakland, California

1.0 INTRODUCTION

Antea®Group is submitting this *Quarterly Summary Report, Fourth Quarter 2016*, for the referenced site in Oakland, California (**Figure 1**). The subject site is an operating 76-branded Service Station located on the southwestern corner of Hegenberger Road and Edgewater Drive in Oakland, California. Station facilities include three underground storage tanks (USTs), two dispenser islands, a station building, and a carwash. Six groundwater monitoring wells are located at the site (**Figure 2**). Well construction details are included in **Table 1**. Please refer to **Appendix A** for the history of environmental investigations and remediation activities.

This report summarizes the data obtained from the recent groundwater monitoring and sampling event conducted on December 2, 2016. Included herein are site figures, summary groundwater data tables, and a discussion of trends. This report has received a technical review by Ms. Regina Bussard, California Professional Geologist No. 8288.

1.1 Work Performed [Fourth Quarter 2016]

1. Antea Group submitted the *Quarterly Summary Report, Third Quarter 2016*, dated November 28, 2016 to the Alameda County Health Care Services Agency (ACHCSA).
2. Antea Group subcontractor Blaine Tech Services, Inc. (Blaine Tech) conducted the fourth quarter 2016 groundwater monitoring and sampling event on December 2, 2016.
3. Antea Group submitted the *Excavation Completion Report*, dated November 23, 2016 to the ACHCSA.

1.2 Work Proposed [First Quarter 2017]

1. Antea Group will submit the *Quarterly Summary Report, Fourth Quarter 2016* (contained herein) to the ACHCSA.
2. Blaine Tech will conduct the fourth quarter 2016 groundwater monitoring and sampling event.
3. Antea Group will submit a request for Low-Threat Closure.

2.0 CURRENT PROJECT STATUS

Current phase of project:	Quarterly Groundwater Monitoring
Local Oversight Program (LOP) – Lead agency for cleanup oversight:	Alameda County Health Care Services Agency Case No. RO0000219
Secondary agency(s):	San Francisco Bay Regional Water Quality Control Board Case No. 01-1601
Monitoring well gauging schedule:	Quarterly: MW-3, MW-9, MW-11, MW-13, MW-15, and MW-16
Monitoring well sampling schedule:	Quarterly: MW-11, MW-13, MW-15, and MW-16 Semi-Annual (second and fourth quarters): MW-3 and MW-9
Total number of monitoring wells (Table 1):	Six (MW-3, MW-9, MW-11, MW-13, MW-15, and MW-16)
Range of well depths (total depth below ground surface, bgs) (Table 1):	13 feet to 20 feet bgs
Wells with historical measurable LNAPL (light non-aqueous phase liquid):	Former monitoring wells MW-1, MW-2, and MW-6
Historical depth to water range, in feet below top of casing (BTOC):	Min: 0.07 (MW-9, Q1 2005) Max: 8.42 (MW-6, Q4 2010)
Historical groundwater elevation range (ft) for monitoring wells MW-1 through MW-17	Min: 2.77 (MW-3, Q3 1994) Max: 9.97 (MW-9, Q4 2016)
Local receptors:	See Appendix A
Current remediation technique	None

2.1 Regulatory Correspondence

On December 19, 2016 ACHCSA denied the submittal of the *Quarterly Summary Report, Third Quarter 2016* pending submittal of associated “GEO_MAP(s)”. Antea Group asked ACHCSA which GEO_MAP(s) were missing. Antea Group is waiting for a response from ACHCSA.

On December 20, 2016 ACHCSA denied the submittal of the Excavation Completion Report pending submittal of remaining EDFs. Antea Group responded, asking which EDFs were missing. Antea Group is waiting for a response from ACHCSA.

2.2 Site Remediation Activities

On-site soil excavation occurred from May 2 through August 5, 2016. Approximately, 1,665 tons of soil was removed during excavation activities.

2.3 Groundwater Monitoring

During the fourth quarter 2016 groundwater monitoring and sampling event, six monitoring wells were gauged, purged, and sampled by Blaine Tech per standard sampling protocol. Copies of Blaine Tech’s field data sheets are presented as **Appendix B**. The recent gauging and sampling data are summarized below and in **Table 2**. Historical gauging and sampling data are summarized in **Tables 3, 3a, 3b, 3c, and 3d**.

Well gauging and sampling date:	December 2, 2016
Wells gauged:	MW-3, MW-9, MW-11, MW-13, MW-15, and MW-16
Wells sampled:	MW-3, MW-9, MW-11, MW-13, MW-15, and MW-16
Purge method:	3 well casing volumes via electric, submersible pump
Sample collection method:	Disposable bailers
Groundwater parameters measured (Appendix B):	Temperature, pH, Conductivity, Dissolved Oxygen (DO), Oxidation Reduction Potential (ORP), and Turbidity
Wells with measurable LNAPL:	None
Current depth to water range (feet BTOC):	Min: 0.97 (MW-9) Max: 3.88 (MW-13)
Current groundwater elevation range (feet):	Min: 7.20 (MW-13) Max: 9.97 (MW-9)
Change in water depths from previous event (average change for all gauged wells):	0.61 foot decrease
Groundwater flow direction and gradient in foot per foot (ft/ft):	Variable (0.012 ft/ft south-southwest and 0.016 ft/ft southeast)

2.3.1 Groundwater Flow Gradient and Directional Trends

The groundwater elevations calculated using the data collected during the fourth quarter 2016 monitoring event indicate variable groundwater flow to the south-southwest and southeast at gradients of 0.012 ft/ft and 0.016 ft/ft, respectively (**Figure 3**). Groundwater flow and gradient during the December 2, 2016 event is consistent with historical flow directions and gradients. **Table 4** summarizes historical gradients and **Figure 4** shows historical groundwater flow interpretations from 1992 to the present.

2.3.2 Groundwater Quality Data

Groundwater samples collected during the fourth quarter 2016 monitoring and sampling event were submitted with chain-of-custody (COC) documentation to Eurofins Calscience, Inc. (Calscience), a state of California Environmental Laboratory Accreditation Program (ELAP) certified laboratory (Certification No. 2944). The complete analytical report and Antea Group's laboratory data validation checklist are presented as **Appendix C**. Groundwater samples were analyzed for the following:

- Total petroleum hydrocarbons as diesel range organics (TPHd) [silica gel preparation] by US Environmental Protection Agency (EPA) Method 8015B(M);
- Total petroleum hydrocarbons as gasoline range organics (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary-butyl ether (MTBE), tert-butyl alcohol (TBA), and ethanol by EPA Method 8260B.

Groundwater analytical results are presented in **Table 2** (current) and **Tables 3, 3a, 3b, 3c, and 3d** (historical). The following table summarizes the frequency of detection and the range of concentrations detected during the fourth

quarter 2016 sampling event. Only constituents detected above the laboratory reporting limit are presented in the table below.

Constituents	Number of Reported Samples Above LRL of the Samples Collected	Minimum Reported Concentration, in µg/L (Sample ID)	Maximum Reported Concentration, in µg/L (Sample ID)
TPHd	2 of 6	230 (MW-16)	240 (MW-15)
TPHg	2 of 6	81 (MW-3)	98 (MW-15)
MTBE	5 of 6	6.9 (MW-11)	33 (MW-15)
TBA	4 of 6	24 (MW-3 and MW-15)	140 (MW-16)

Explanations:

µg/L = Micrograms per liter

LRL = Laboratory reporting limit

2.3.3 Groundwater Contaminant Trends

Graphs showing changes in TPHd, TPHg, benzene, and MTBE concentrations (as applicable per well) and changes in depth to water over time for wells MW-3, MW-9, MW-11, MW-13, MW-15, and MW-16 are included as **Appendix D**. Overall, TPHg, TPHd, benzene, and MTBE concentrations have been stable to decreasing at the monitoring well locations. The distribution of dissolved phase TPHg, benzene, and MTBE is shown on **Figure 5**. Note, benzene and MTBE concentrations did not exceed the Low-Threat Closure thresholds.

2.3.4 Waste Disposal Summary

Blaine Tech transported wastewater generated from purging/sampling and equipment cleaning to their bulk facility in San Jose, California. A waste manifest for this event is currently unavailable as of the date of this report. A copy of the final waste manifest will be submitted upon receipt.

2.3.5 Quality Assurance / Quality Control

Antea Group's QA/QC measures included completing a data validation checklist for the December 2016 Calscience analytical results. Antea Group's data validation checklist is included with the Calscience laboratory report in **Appendix C**.

Laboratory QA/QC Performed:	Yes (validated by Antea Group)
Laboratory Data Qualifiers:	Yes – one qualifier*
Are the data valid for their intended purpose?	Yes, the data are valid

* HD - The chromatographic pattern was inconsistent with the profile of the reference fuel standard (noted on the TPHd results for monitoring wells MW-15 and MW-16)

Based on a review of the laboratory's analytical report, including their QA/QC procedures and those implemented by Antea Group, we conclude that the laboratory data obtained during this groundwater sampling event are valid for their intended purpose.

3.0 DISCUSSION

Petroleum hydrocarbon impacts to the groundwater has historically been limited to the vicinities of former monitoring wells MW-6 and MW-14 in the southwest corner of the site downgradient of the source areas and former monitoring wells MW-12 and MW-17 on the east side of the site near the dispenser islands. Historically, groundwater elevations beneath the site have ranged from approximately 2.77 feet to 9.97 feet above datum.

The excavation activities during the second and third quarters of 2016 removed the majority of the petroleum hydrocarbon impacts in soil. Regeneration brand Oxygen Release Compound® (ORC-A®) was added to the excavation backfill to remediate the remaining constituents of concern estimated in groundwater.

During the recent monitoring event, MTBE was reported in five of the six monitoring wells; however, none of the reported concentrations exceeded the California Low-Threat Closure Policy threshold of 1,000 µg/l MTBE. Reported benzene concentrations did not exceed the LRLs.

4.0 CONCLUSIONS

The petroleum hydrocarbon impacts monitored and reported during the fourth quarter 2016, are relatively consistent with historical data. Targeted areas of petroleum hydrocarbon impact based on historical soil and groundwater data underwent excavation between May 2016 and August 2016, removing secondary source impacts to the extent practicable. Remaining impact to the soil and groundwater is below California Low-Threat Closure Policy thresholds.

5.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. For any reports cited that were not generated by Delta or Antea Group, the data from those reports is used "as is" and is assumed to be accurate. Antea Group does not guarantee the accuracy of this data for the referenced work performed nor the inferences or conclusions stated in these reports. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

Prepared by:



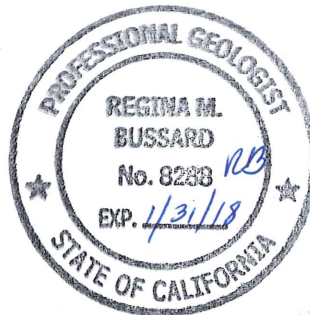
Jonathan Fillingame
Project Professional

Information, conclusions, and recommendations provided by Antea Group in this document regarding the site have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Licensed Approver:



Regina Bussard, PG
Project Professional
California Registered Professional Geologist No. 8288
Antea Group



cc: GeoTracker (upload)

Figures

- Figure 1 Site Location Map
- Figure 2 Site Plan
- Figure 3 Groundwater Elevation Contour Map – December 2, 2016
- Figure 4 Historical Groundwater Flow Directions
- Figure 5 Dissolved Phase Concentration Map – December 2, 2016

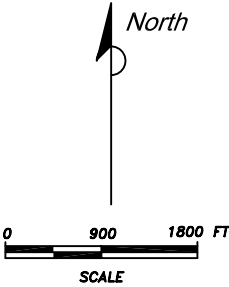
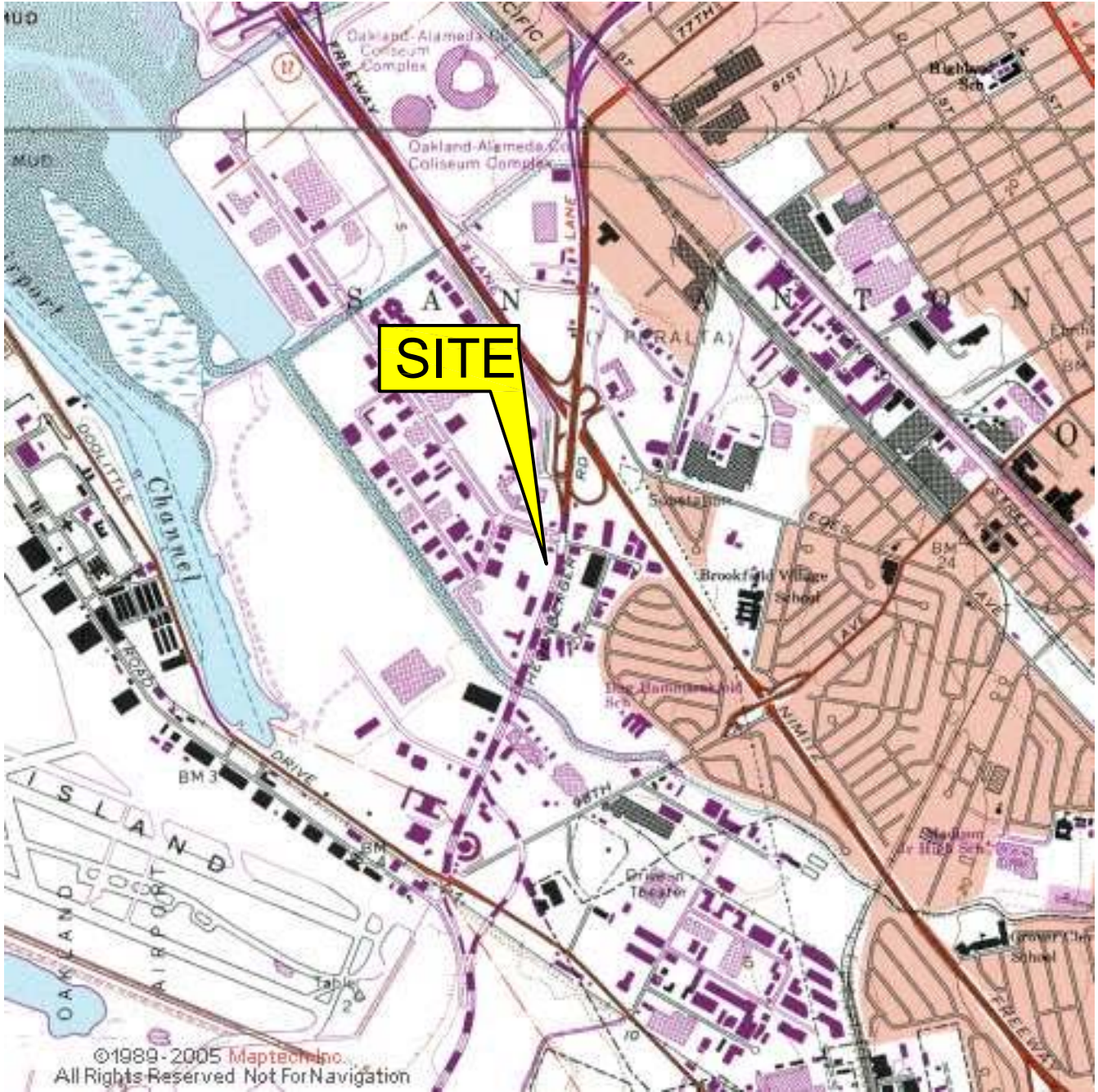

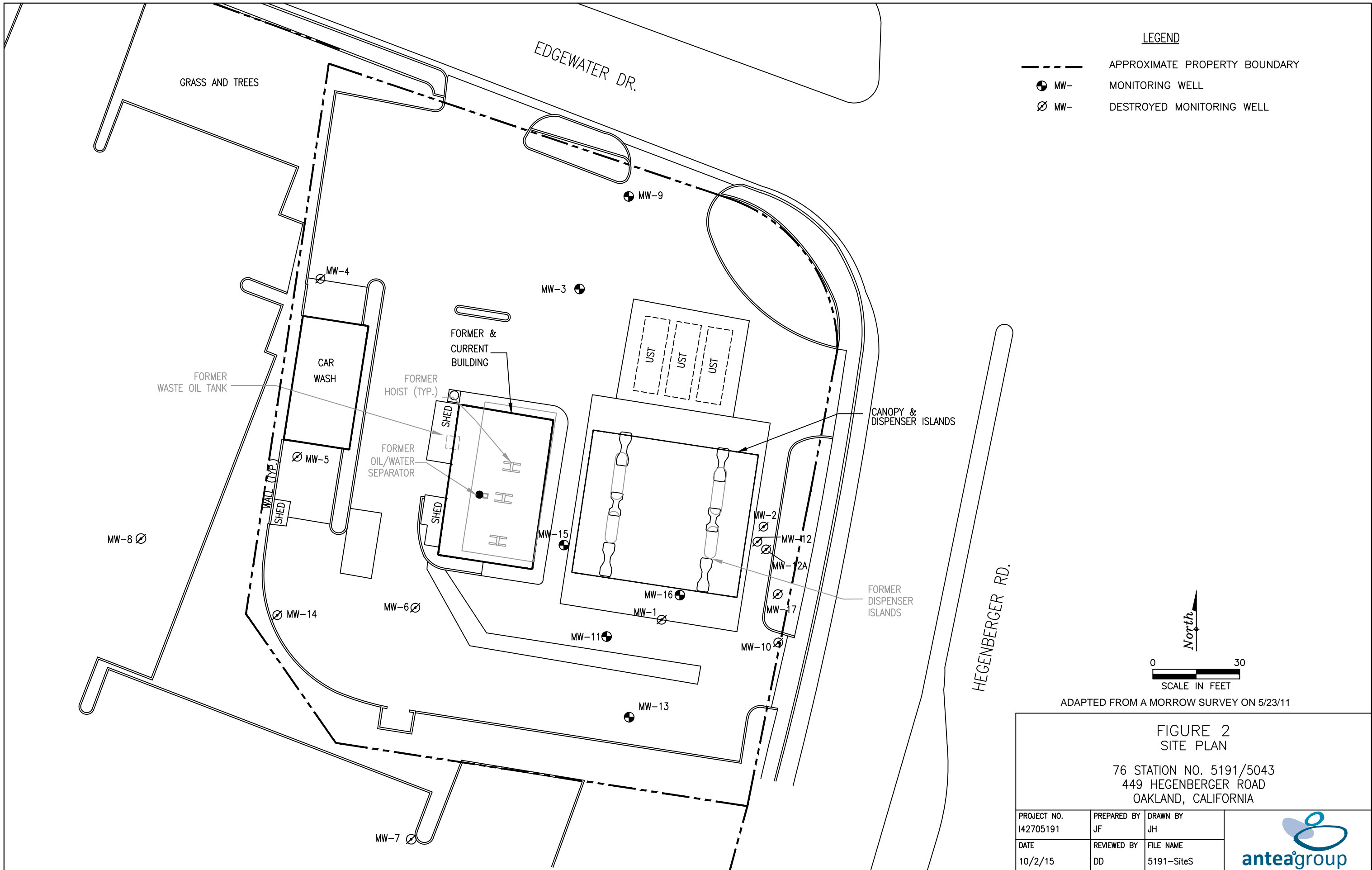


FIGURE 1
SITE LOCATION MAP
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA

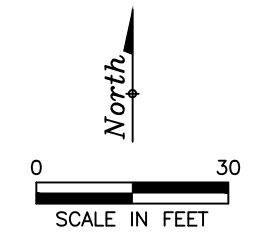
PROJECT NO. 142705191	PREPARED BY EW	DRAWN BY DR/JH	
DATE 1/31/11	REVIEWED BY DD	FILE NAME 5043-SiteLocator	

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, OAKLAND EAST QUADRANGLE (1973)



LEGEND


- APPROXIMATE PROPERTY BOUNDARY
- MW- MONITORING WELL
- ⊘ MW- DESTROYED MONITORING WELL



ADAPTED FROM A MORROW SURVEY ON 5/23/11

**FIGURE 2
SITE PLAN**

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO. I42705191	PREPARED BY JF	DRAWN BY JH	
DATE 10/2/15	REVIEWED BY DD	FILE NAME 5191-SiteS	

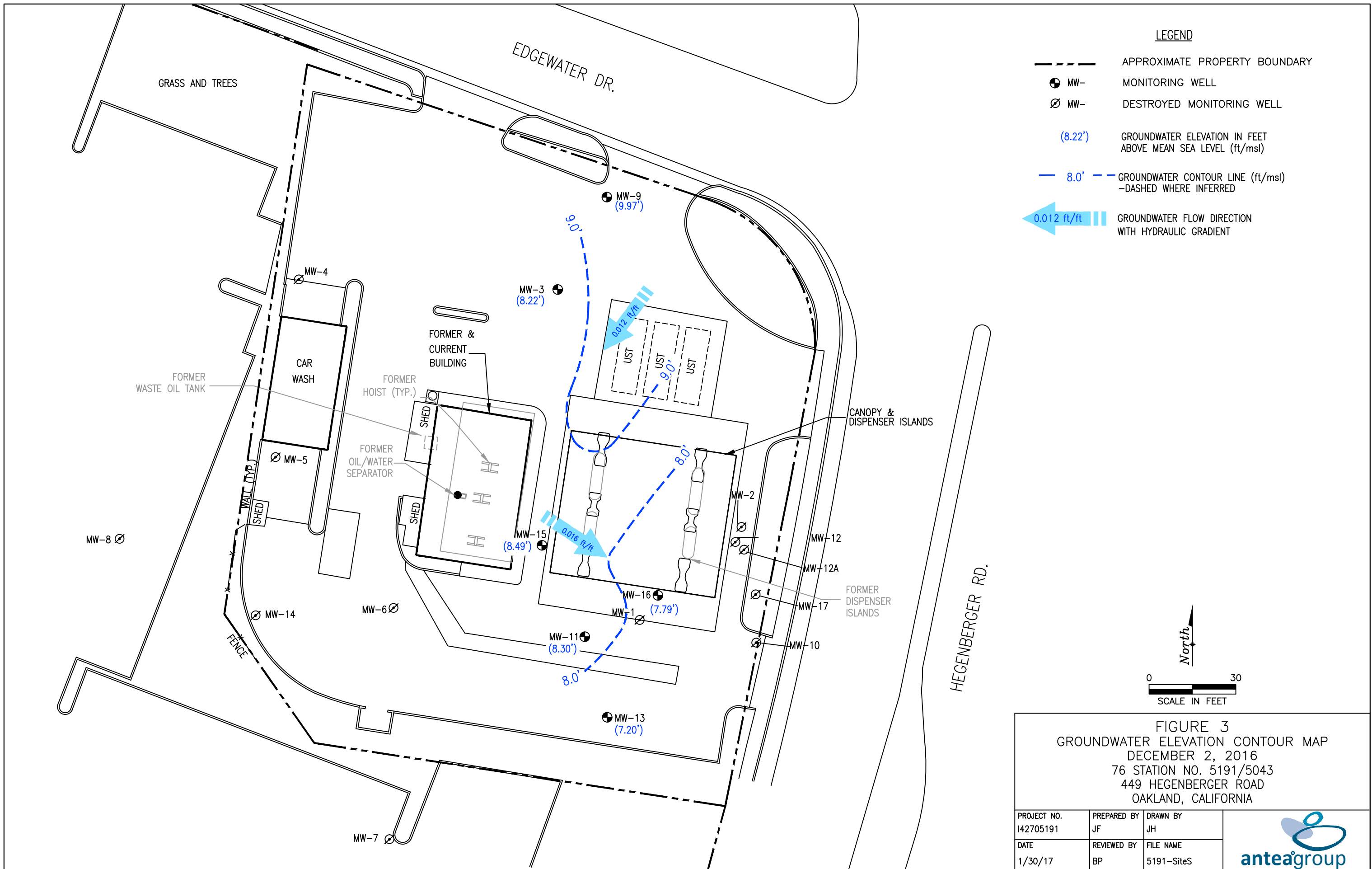
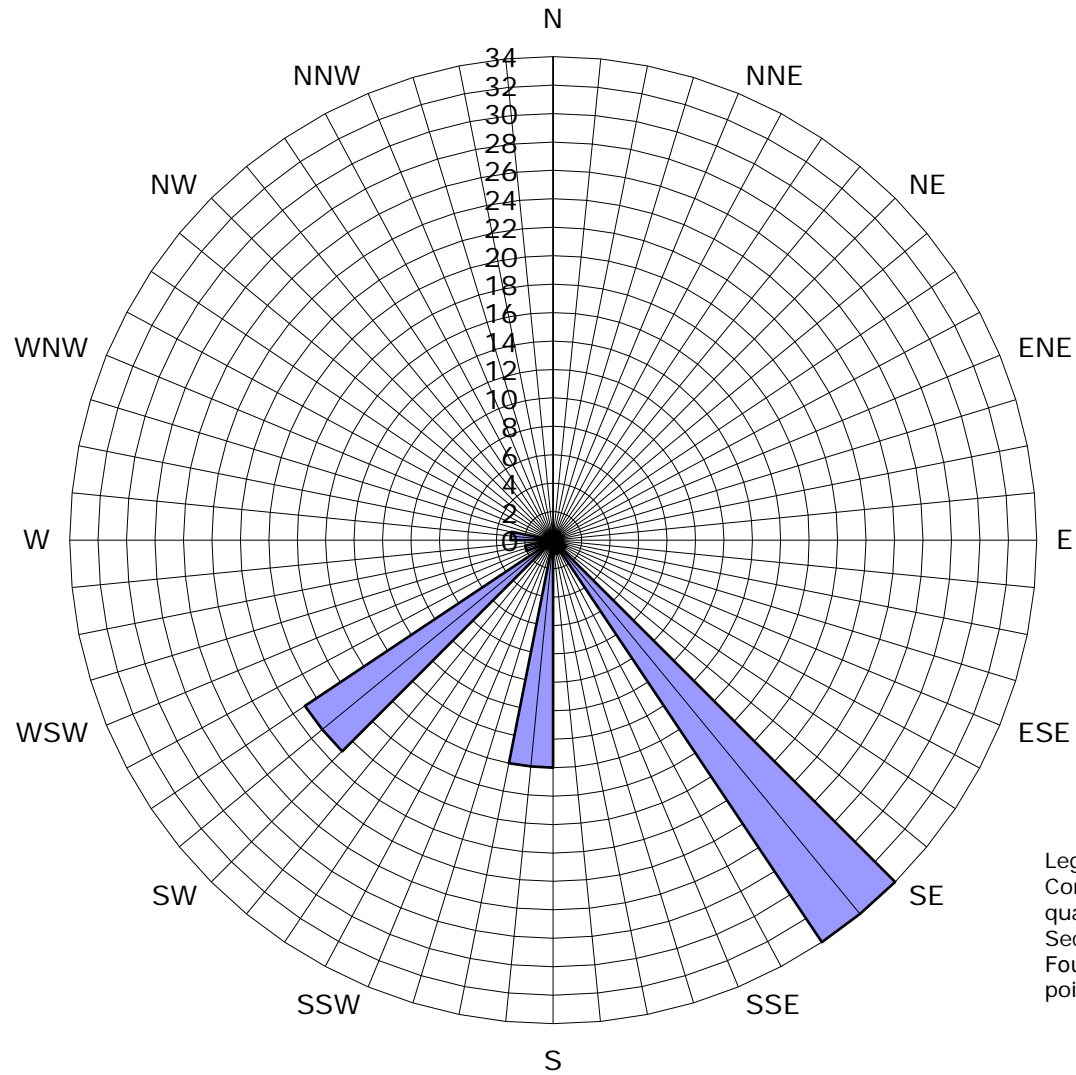


FIGURE 3
 GROUNDWATER ELEVATION CONTOUR MAP
 DECEMBER 2, 2016
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA

PROJECT NO. I42705191	PREPARED BY JF	DRAWN BY JH
DATE 1/30/17	REVIEWED BY BP	FILE NAME 5191-SiteS

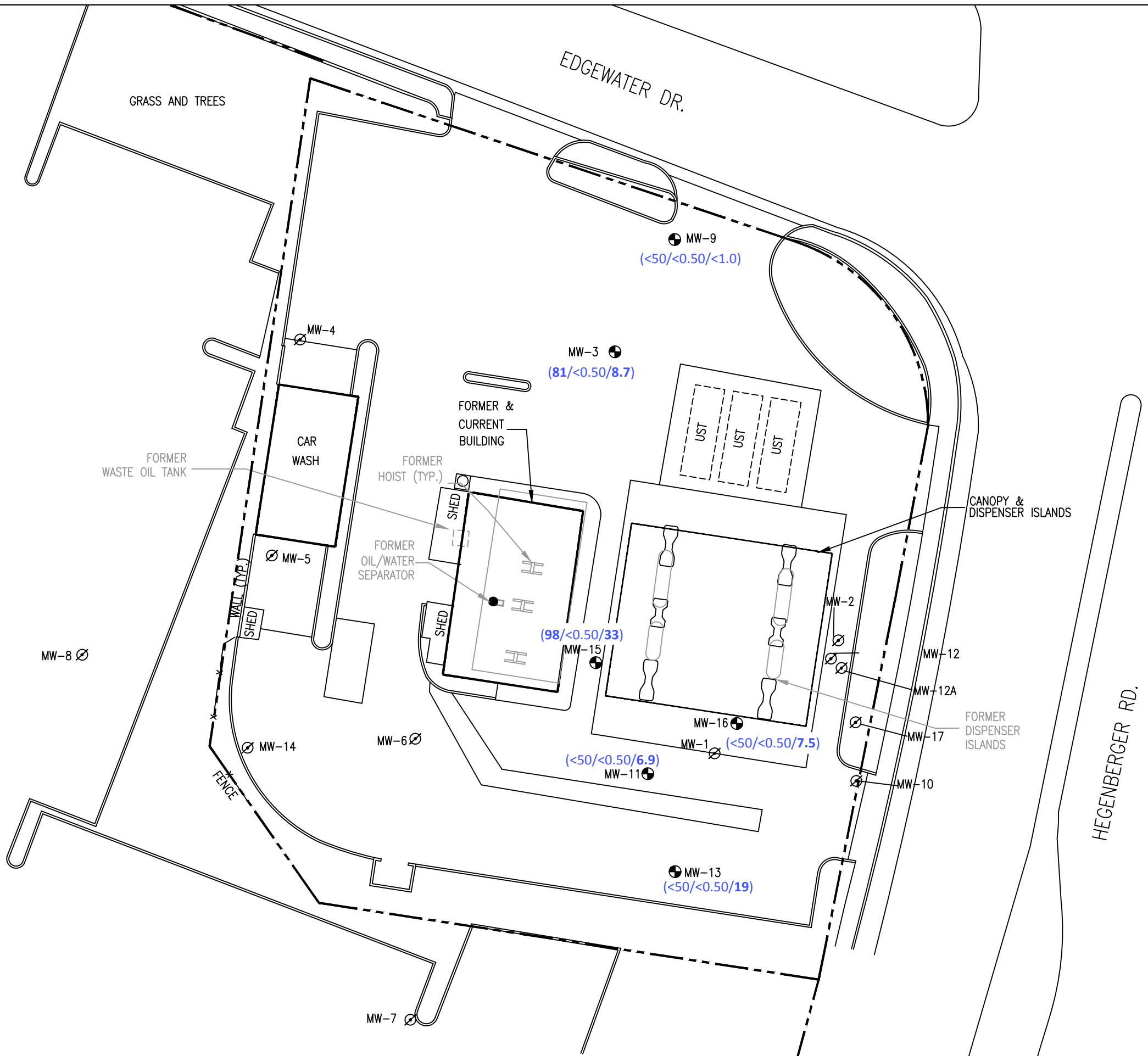


Figure 4
Historical Groundwater Flow Directions
76 Station No. 5191/5043
 449 Hegenberger Road
 Oakland, California



Legend
 Concentric circles represent
 quarterly monitoring events
 Second Quarter 1992 through
 Fourth Quarter 2016. 78 data
 points shown

■ Groundwater Flow Direction



LEGEND

--- APPROXIMATE PROPERTY BOUNDARY

⊕ MW- MONITORING WELL

⊘ MW- DESTROYED MONITORING WELL

(<50/<0.50/47) (TPHg / BENZENE / MTBE) (µg/L)

NOTES:

TPHg = TOTAL PETROLEUM HYDROCARBONS

MTBE = METHYL TERTIARY BUTYL ETHER

µg/L = MICROGRAMS PER LITER

<50 = LESS THAN LABORATORY INDICATED REPORTING LIMITS

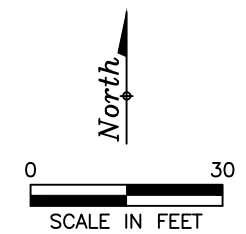



FIGURE 5
DISSOLVED PHASE CONCENTRATION MAP
DECEMBER 2, 2016
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA

PROJECT NO. I42705191	PREPARED BY JF	DRAWN BY JH
DATE 10/20/16	REVIEWED BY BP	FILE NAME 5191-SiteS



Tables

Table 1	Well Construction Details
Table 2	Current Groundwater Gauging and Analytical Data
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Table 3c	Additional Historical Groundwater Analytical Data
Table 3d	Additional Historical Groundwater Analytical Data
Table 4	Historical Groundwater Gradient and Flow Direction Data

TABLE 1
WELL CONSTRUCTION DETAILS
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA



Well I.D.	Drill Date	Well		Screen		Screen Length (feet)	Comments
		Depth (feet bgs)	Diameter (inches)	Top (feet bgs)	Bottom (feet bgs)		
Monitoring Wells							
MW-1	02/05/91	13.5	2	2.0	13.0	11.0	Destroyed
MW-2	02/05/91	15.0	2	3.0	15.0	12.0	Destroyed
MW-3	02/05/91	14.0	2	2.0	14.0	12.0	
MW-4	08/21/92	13.5	2	2.5	13.5	11.0	Destroyed
MW-5	08/21/92	13.5	2	2.5	13.5	11.0	Destroyed
MW-6	08/21/92	13.5	2	2.5	13.5	11.0	Destroyed
MW-7	04/21/97	13.0	2	3.0	13.0	10.0	Destroyed
MW-8	04/21/97	15.0	2	3.0	15.0	12.0	Destroyed
MW-9	01/25/95	13.0	2	3.0	13.0	10.0	
MW-10	01/25/95	13.0	2	3.0	13.0	10.0	Destroyed
MW-11	06/22/10	20.0	4	5.0	20.0	15.0	
MW-12	06/22/10	20.0	4	5.0	20.0	15.0	Destroyed
MW-12A	06/23/10	34.0	2	30.0	34.0	4.0	Destroyed
MW-13	06/22/10	15.0	2	5.0	15.0	10.0	
MW-14	05/17/11	13.0	2	3.0	13.0	10.0	Destroyed
MW-15	05/17/11	13.0	2	3.0	13.0	10.0	
MW-16	05/17/11	13.0	2	3.0	13.0	10.0	
MW-17	05/18/11	13.0	2	3.0	13.0	10.0	Destroyed
Explanation							
Wells are of poly-vinyl-chloride (PVC) construction							
bgs = Below ground surface							

TABLE 2
CURRENT GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA



Well I.D.	Date	GROUNDWATER ELEVATION DATA						GROUNDWATER ANALYTICAL DATA								
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)	Ethanol (ug/L)
MW-3	12/2/2016	10.81	2.59	NP	--	8.22	--	< 48	81	< 0.50	< 1.0	< 1.0	< 1.0	8.7	24	< 100
MW-9	12/2/2016	10.94	0.97	NP	--	9.97	--	< 45	< 50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 10	< 100
MW-11	12/2/2016	10.53	2.23	NP	--	8.30	--	< 46	< 50	< 0.50	< 1.0	< 1.0	< 1.0	6.9	< 10	< 100
MW-13	12/2/2016	11.08	3.88	NP	--	7.20	--	< 45	< 50	< 0.50	< 1.0	< 1.0	< 1.0	19	63	< 100
MW-15	12/2/2016	11.11	2.62	NP	--	8.49	--	240 HD	98	< 0.50	< 1.0	< 1.0	< 1.0	33	24	< 100
MW-16	12/2/2016	10.98	3.19	NP	--	7.79	--	230 HD	< 50	< 0.50	< 1.0	< 1.0	< 1.0	7.5	140	< 100

Gauging Notes:

TOC - Top of Casing

ft - Feet

NP - LNAPL not present

LNAPL - Light non-aqueous phase liquid

* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)

-- - No information available

Analytical Notes:

< - Below laboratory's indicated reporting limit

ug/L - micrograms/liter

TPHd- Total petroleum hydrocarbons as diesel (silica gel treated)

TPHg- Total petroleum hydrocarbons as gasoline, also known as Gasoline Range Organics (GRO)

MTBE- Methyl tertiary-butyl ether

TBA- Tertiary-butyl alcohol

Bold - Above the laboratory's indicated reporting limit

HD - The chromatographic pattern was inconsistent with the profile of the reference fuel standard

TABLE 3
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA



Well I.D.	Date	GROUNDWATER ELEVATION DATA						GROUNDWATER ANALYTICAL DATA															
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)	
MW-16	12/12/2013	10.98	2.90	NP	--	8.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-16	3/4/2014	10.98	3.25	NP	--	7.73	--	< 50	60	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	440	--	--	--	400	< 5.0	--	--	
MW-16	6/12/2014	10.98	3.67	NP	--	7.31	--	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	92	--	--	--	440	< 5.0	--	--	
MW-16	9/5/2014	10.98	3.70	NP	--	7.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-16	12/22/2014	10.98	3.11	NP	--	7.87	--	< 50	< 50	0.52	< 0.50	< 0.50	< 0.50	< 0.50	23	--	--	--	140	< 5.0	--	--	
MW-16	3/16/2015	10.98	3.03	NP	--	7.95	--	--	--	--	< 0.50	< 0.50	< 0.50	< 1.0	9.2	--	--	--	185	< 5.0	--	--	
MW-16	6/11/2015	10.98	3.62	NP	--	7.36	--	< 50	< 250	< 2.5	< 5.0	< 5.0	--	--	5.1	--	--	--	130	< 500	--	--	
MW-16	9/9/2015	10.98	3.98	NP	--	7.00	--	< 50	< 50	< 0.5	< 1.0	< 1.0	< 1.0	--	12	--	--	--	100	< 501	--	--	
MW-16	12/8/2015	10.98	3.86	NP	--	7.12	--	< 50	< 50	< 0.50	< 1.0	< 1.0	< 1.0	--	15	--	--	--	140	< 100	--	--	
MW-16	3/8/2016	10.98	3.23	NP	--	7.75	--	140 HD	< 50	< 0.50	< 1.0	< 1.0	< 1.0	--	8.3	--	--	--	130	< 100	--	--	
MW-16	6/28/2016	10.98	3.57	NP	--	7.41	--	330 HD	< 50	< 0.50	< 1.0	< 1.0	--	--	4.3	--	--	--	86	< 100	--	--	
MW-16	9/19/2016	10.98	3.19	NP	--	7.79	--	490 HD	< 50	< 0.50	< 1.0	< 1.0	< 1.0	--	5.7	--	--	--	87	< 100	--	--	
MW-16	12/2/2016	10.98	3.19	NP	--	7.79	--	230 HD	< 50	< 0.50	< 1.0	< 1.0	< 1.0	--	7.5	--	--	--	140	< 100	--	--	
MW-17	6/2/2011	11.52	5.78	NP	--	5.74	--	687	9,130	2,530	960	35.1	907	--	0.74	--	--	--	366	< 250	--	--	
MW-17	9/7/2011	11.52	4.56	NP	--	6.96	--	1,900	47,200	9,620	5,510	1,210	4,510	--	< 25.0	--	--	--	--	< 12500	--	--	
MW-17	12/5/2011	11.52	4.70	NP	--	6.82	--	1,790	17,300	4,720	511	238	747	--	< 2.5	--	--	--	--	< 1250	--	--	
MW-17	3/6/2012	11.52	4.64	NP	--	6.88	--	1,530	1,580	2,090	23.8	39.3	166	--	1.1	--	--	--	481	< 250	--	--	
MW-17	6/11/2012	11.52	4.67	NP	--	6.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-17	6/12/2012	--	--	--	--	--	--	1,090	4,950	2,340	123	153	610	--	< 2.5	--	--	--	411	< 1250	--	--	
MW-17	9/6/2012	11.52	4.39	NP	--	7.13	--	< 1,000	18,000	4,300	170	370	1,100	--	< 10	< 10	< 10	< 10	300	< 100	< 10	110	
MW-17	12/13/2012	11.52	4.20	NP	--	7.32	--	< 100	55,000	7,300	2,700	1,700	4,600	--	< 10	--	--	--	300	< 100	--	--	
MW-17	3/14/2013	11.52	4.70	NP	--	6.82	--	< 200	63,000	13,000	5,400	3,100	8,800	--	< 15	--	--	--	260	< 150	--	--	
MW-17	6/11/2013	11.52	4.83	NP	--	6.69	--	710	110,000	10,000	11,000	3,100	12,000	--	< 25	--	--	--	< 150	< 250	--	--	
MW-17	9/10/2013	11.52	4.60	NP	--	6.92	--	160	36,000	8,200	510	1,200	2,400	--	< 15	--	--	--	320	< 150	--	--	
MW-17	12/12/2013	11.52	5.00	NP	--	6.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-17	3/4/2014	11.52	3.99	NP	--	7.53	--	400	13,000	1,600	270	260	540	--	< 3.0	--	--	--	330	48	--	--	
MW-17	6/12/2014	11.52	4.49	NP	--	7.03	--	87	17,000	3,600	410	650	1,100	--	< 3.0	--	--	--	300	< 30	--	--	
MW-17	6/18/2014	11.52	--	--	--	--	WD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Gauging Notes:

TOC - Top of Casing
ft - Feet
NP - LNAPL not present
LNAPL - Light non-aqueous phase liquid
* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)
-- - No information available

Analytical Notes:

< - Below laboratory's indicated reporting limit
ug/L - micrograms/liter
TPHd- Total petroleum hydrocarbons as diesel
TPHg- Total petroleum hydrocarbons as gasoline, also known as Gasoline Range Organics (GRO)
MTBE- Methyl tertiary-butyl ether
TBA- Tertiary-butyl alcohol
Bold - Above the laboratory's indicated reporting limit
1n - The TPHg result for this sample did not match the laboratory standard for gasoline. This is likely due to the presence of MTBE in the sample.
A - Lower boiling hydrocarbons present, atypical for Diesel Fuel.
2V - The detection of Ethanol is biased high likely due to the presence of interfering compounds
HD - The chromatographic pattern was inconsistent with the profile of the reference fuel standard

TABLE 3a
 ADDITIONAL HISTORICAL GROUNDWATER ANALYTICAL DATA
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA



Well I.D.	Date	GROUNDWATER ANALYTICAL DATA																						
		Acetone (ug/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Hydroxide (CaCO ₃) (mg/L)	Alkalinity, Total A2320B (mg/L)	Alkalinity, Total as CaCO ₃ A2320B (mg/L)	Antimony (ug/L)	Arsenic (mg/L)	Arsenic (ug/L)	Barium (ug/L)	Beryllium (ug/L)	Biochemical Oxygen Demand (ug/L)	Bromate (mg/L)	Bromide (mg/L)	Cadmium (mg/L)	Cadmium (ug/L)	Chemical Oxygen Demand (ug/L)	Chloride (ug/L)	Chromium (mg/L)	Chromium (ug/L)	Chromium, Hexavalent (ug/L)	Cobalt (ug/L)	Coliform, Total MPN/100ML	E. Coli MPN/100ML
MW-6	3/14/2011	18.4	--	--	--	--	< 60.0	--	22.7	216	< 5.0	32,200	--	--	--	< 5.0	173,000	204,000	--	--	--	< 50.0	--	--
MW-6	6/2/2011	< 5.0	828	< 1	828	< 1	< 60.0	--	22.0	191	< 5.0	45,100	< 0.005	2.1	--	< 5.0	121,000	149,000	--	4.3	< 2	< 50.0	42,000	< 100
MW-6	9/6/2012	--	--	--	--	650	--	--	--	--	--	--	--	--	--	--	--	--	< 0.0050	--	< 10	--	--	--
MW-6	3/4/2014	--	--	--	--	--	--	0.031	--	--	--	--	--	--	< 0.0010	--	--	--	< 0.0050	--	--	--	--	--
MW-9	3/14/2011	< 5.0	--	--	--	--	< 60.0	--	< 20.0	< 100	< 5.0	7,160	--	--	--	< 5.0	11,500	34,700	--	--	--	< 50.0	--	--
MW-9	6/2/2011	< 5.0	226	< 1	226	< 1	< 60.0	--	< 20.0	< 100	< 5.0	4,170	< 0.005	2	--	< 5.0	15,100	32,400	--	2.4	< 0.2	< 50.0	2	< 1
MW-10	9/6/2012	--	--	--	--	561	--	--	--	--	--	--	--	--	--	--	--	--	0.017	--	< 10	--	--	--
MW-12	3/14/2011	< 5.0	--	--	--	--	< 60.0	--	< 20.0	< 100	< 5.0	< 2000	--	--	--	< 5.0	80,100	8,240,000	--	--	--	< 50.0	--	--
MW-12	6/2/2011	< 5.0	905	< 1	905	< 1	< 60.0	--	< 20.0	< 100	< 5.0	7,240	< 0.05	33	--	< 5.0	191,000	7,260,000	--	3.3	< 2	< 50.0	210	< 1
MW-12	9/6/2012	--	--	--	--	806	--	--	--	--	--	--	--	--	--	--	--	--	< 0.0050	--	< 10	--	--	--
MW-12	3/4/2014	--	--	--	--	--	--	< 0.015	--	--	--	--	--	--	0.0018	--	--	--	< 0.0050	--	--	--	--	--
MW-14	9/6/2012	--	--	--	--	1,720	--	--	--	--	--	--	--	--	--	--	--	--	0.024	--	< 10	--	--	--
MW-17	9/6/2012	--	--	--	--	2,820	--	--	--	--	--	--	--	--	--	--	--	--	0.038	--	< 10	--	--	--

Analytical Notes:
 < - Below laboratory's indicated reporting limit
 mg/L - milligrams per liter
 MPN/100ML - most probable number per 100 ml
 ug/L - micrograms/liter
 Bold - Above the laboratory's indicated reporting limit

TABLE 3c
 ADDITIONAL HISTORICAL GROUNDWATER ANALYTICAL DATA
 76 STATION NO. 5191/5041
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA



Well I.D.	Date	GROUNDWATER ANALYTICAL DATA											
		Selenium (ug/L)	Silver (mg/L)	Silver (ug/L)	Sulfate E300 (mg/L)	Sulfate E300 (ug/L)	Sulfate E300.1 (mg/L)	Sulfate E300.1 (ug/L)	Thallium (ug/L)	Total Organic Carbon (mg/L)	Vanadium (ug/L)	Zinc (mg/L)	Zinc (ug/L)
MW-3	12/17/2009	--	--	--	--	--	< 0.5	--	--	--	--	--	--
MW-3	6/30/2010	--	--	--	--	--	< 5000	--	--	--	--	--	--
MW-3	6/2/2011	--	--	--	--	--	< 5000	--	--	--	--	--	--
MW-3	6/11/2012	--	--	--	--	--	< 2000	--	--	--	--	--	--
MW-6	9/17/2009	--	--	--	--	--	< 0.0010	--	--	--	--	--	--
MW-6	12/17/2009	--	--	--	--	--	< 0.5	--	--	--	--	--	--
MW-6	3/29/2010	--	--	--	< 1.0	--	--	--	--	--	--	--	--
MW-6	6/30/2010	--	--	--	--	--	< 5000	--	--	--	--	--	--
MW-6	9/20/2010	--	--	--	--	--	< 1000	--	--	--	--	--	--
MW-6	3/14/2011	< 10.0	--	< 10.0	--	35,400	--	--	< 20.0	--	< 50.0	--	< 40.0
MW-6	6/2/2011	< 10.0	--	< 10.0	--	38,900	--	--	< 20.0	41	< 50.0	--	< 40.0
MW-6	6/12/2012	--	--	--	--	1,110	--	--	--	--	--	--	--
MW-6	3/4/2014	--	< 0.0050	--	--	--	--	--	--	--	--	0.036	--
MW-7	6/30/2010	--	--	--	--	191,000	--	--	--	--	--	--	--
MW-7	6/2/2011	--	--	--	--	48,900	--	--	--	--	--	--	--
MW-7	6/11/2012	--	--	--	--	56,900	--	--	--	--	--	--	--
MW-8	6/30/2010	--	--	--	--	2,360,000	--	--	--	--	--	--	--
MW-8	6/2/2011	--	--	--	--	2,830,000	--	--	--	--	--	--	--
MW-8	6/11/2012	--	--	--	--	2,570,000	--	--	--	--	--	--	--
MW-9	12/17/2009	--	--	--	--	--	11	--	--	--	--	--	--
MW-9	6/30/2010	--	--	--	--	19,000	--	--	--	--	--	--	--
MW-9	3/14/2011	< 10.0	--	< 10.0	--	8,980	--	--	< 20.0	--	< 50.0	--	< 40.0
MW-9	6/2/2011	< 10.0	--	< 10.0	--	18,600	--	--	< 20.0	4.7	< 50.0	--	< 40.0
MW-9	6/11/2012	--	--	--	--	42,500	--	--	--	--	--	--	--
MW-10	9/17/2009	--	--	--	--	84	--	0.084	--	--	--	--	--
MW-10	12/17/2009	--	--	--	--	86	--	--	--	--	--	--	--
MW-10	12/17/2009	--	--	--	--	86	--	--	--	--	--	--	--
MW-10	3/29/2010	--	--	--	--	73,600	--	--	--	--	--	--	--
MW-10	3/29/2010	--	--	--	73.6	--	--	--	--	--	--	--	--
MW-10	6/30/2010	--	--	--	--	70,800	--	--	--	--	--	--	--
MW-10	9/20/2010	--	--	--	--	82,000	--	--	--	--	--	--	--
MW-10	3/14/2011	--	--	--	--	68,600	--	--	--	--	--	--	--
MW-10	6/2/2011	--	--	--	--	71,700	--	--	--	--	--	--	--
MW-10	6/11/2012	--	--	--	--	70,100	--	--	--	--	--	--	--
MW-11	7/6/2010	--	--	--	--	82,100	--	--	--	--	--	--	--
MW-11	9/20/2010	--	--	--	--	58,300	--	--	--	--	--	--	--
MW-11	3/14/2011	--	--	--	--	59,900	--	--	--	--	--	--	--
MW-11	6/2/2011	--	--	--	--	62,900	--	--	--	--	--	--	--
MW-11	6/11/2012	--	--	--	--	79,400	--	--	--	--	--	--	--
MW-12	7/6/2010	--	--	--	--	3,030,000	--	--	--	--	--	--	--
MW-12	9/20/2010	--	--	--	--	1,970,000	--	--	--	--	--	--	--
MW-12	3/14/2011	< 10.0	--	< 10.0	--	2,500,000	--	--	< 20.0	--	< 50.0	--	< 40.0
MW-12	6/2/2011	< 10.0	--	< 10.0	--	2,330,000	--	--	< 20.0	9.1	< 50.0	--	< 40.0
MW-12	6/12/2012	--	--	--	--	2,130,000	--	--	--	--	--	--	--
MW-12	3/4/2014	--	< 0.0050	--	--	--	--	--	--	--	--	0.046	--
MW-12A	7/6/2010	--	--	--	--	100,000	--	--	--	--	--	--	--
MW-12A	9/20/2010	--	--	--	--	82,500	--	--	--	--	--	--	--
MW-12A	3/14/2011	--	--	--	--	81,000	--	--	--	--	--	--	--
MW-12A	6/2/2011	--	--	--	--	101,000	--	--	--	--	--	--	--
MW-12A	6/11/2012	--	--	--	--	118,000	--	--	--	--	--	--	--
MW-13	7/6/2010	--	--	--	--	450,000	--	--	--	--	--	--	--
MW-13	9/20/2010	--	--	--	--	241,000	--	--	--	--	--	--	--
MW-13	3/14/2011	--	--	--	--	375,000	--	--	--	--	--	--	--
MW-13	6/2/2011	--	--	--	--	188,000	--	--	--	--	--	--	--
MW-13	6/12/2012	--	--	--	--	131,000	--	--	--	--	--	--	--

TABLE 3c
 ADDITIONAL HISTORICAL GROUNDWATER ANALYTICAL DATA
 76 STATION NO. 5191/5041
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA



Well I.D.	Date	GROUNDWATER ANALYTICAL DATA											
		Selenium (ug/L)	Silver (mg/L)	Silver (ug/L)	Sulfate E300 (mg/L)	Sulfate E300 (ug/L)	Sulfate E300.1 (mg/L)	Sulfate E300.1 (ug/L)	Thallium (ug/L)	Total Organic Carbon (mg/L)	Vanadium (ug/L)	Zinc (mg/L)	Zinc (ug/L)
MW-3	12/17/2009	--	--	--	--	--	< 0.5	--	--	--	--	--	--
MW-14	6/2/2011	--	--	--	--	56,300	--	--	--	--	--	--	--
MW-14	6/12/2012	--	--	--	--	439,000	--	--	--	--	--	--	--
MW-15	6/2/2011	--	--	--	--	62,700	--	--	--	--	--	--	--
MW-15	6/12/2012	--	--	--	--	42,100	--	--	--	--	--	--	--
MW-16	6/2/2011	--	--	--	--	8,740	--	--	--	--	--	--	--
MW-16	6/12/2012	--	--	--	--	19,900	--	--	--	--	--	--	--
MW-17	6/2/2011	--	--	--	--	3,920,000	--	--	--	--	--	--	--
MW-17	6/12/2012	--	--	--	--	2,520,000	--	--	--	--	--	--	--

Analytical Notes:

< - Below laboratory's indicated reporting limit

mg/L - milligrams per liter

ug/L - micrograms/liter

Bold - Above the laboratory's indicated reporting limit

TABLE 3d
 ADDITIONAL HISTORICAL GROUNDWATER ANALYTICAL DATA
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA



Well I.D.	Date	GROUNDWATER ANALYTICAL DATA												
		1,2,4-Trimethylbenzene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Isopropylbenzene (ug/L)	Naphthalene (ug/L)	o-Xylene (ug/L)	m,p-Xylenes (ug/L)	n-Butylbenzene (ug/L)	n-Propylbenzene (ug/L)	p-Isopropyltoluene (ug/L)	sec-Butylbenzene (ug/L)	Oil & Grease (HEM) (ug/L)	Phenolics (ug/L)	Cyanide (ug/L)
MW-3	6/11/2015	--	--	--	--	< 5.0	< 5.0	--	--	--	--	--	--	--
MW-6	3/4/2014	--	--	--	--	--	1,400	--	--	--	--	1.6	< 0.1	< 0.02
MW-6	3/4/2014	3000	860	200	990	300	--	100	530	22	53	--	--	--
MW-6	6/11/2015	--	--	--	--	2,000	5,800	--	--	--	--	--	--	--
MW-9	6/11/2015	--	--	--	--	< 2.0	< 2.0	--	--	--	--	--	--	--
MW-11	6/11/2015	--	--	--	--	< 1.0	< 1.0	--	--	--	--	--	--	--
MW-12	3/4/2014	--	11	--	--	--	< 2.0	--	--	--	--	1.9	0.1	< 0.02
MW-12	3/4/2014	3.7	< 2.0	< 2.0	< 2.0	< 2.0	--	< 2.0	< 2.0	< 2.0	< 2.0	--	--	--
MW-13	6/11/2015	--	--	--	--	< 5.0	< 5.0	--	--	--	--	--	--	--
MW-14	6/11/2015	--	--	--	--	< 5.0	470	--	--	--	--	--	--	--
MW-15	6/11/2015	--	--	--	--	< 1.0	< 1.0	--	--	--	--	--	--	--
MW-16	6/11/2015	--	--	--	--	< 5.0	< 5.0	--	--	--	--	--	--	--

Analytical Notes:

< - Below laboratory's indicated reporting limit
 mg/L - milligrams per liter
 MPN/100ML - most probable number per 100 ml
 ug/L - micrograms/liter

Bold - Above the laboratory's indicated reporting limit

A full list of volatile organic compounds by EPA Method 624 was analyzed for monitoring wells MW-6 and MW-12, only constituents reported above the laboratory's indicated reporting limits are included in the table.

TABLE 4
HISTORICAL GROUNDWATER GRADIENT AND FLOW DIRECTION DATA
 76 STATION NO. 5191/5043
 449 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA



Site	Monitoring Date	Groundwater Gradient (feet per foot)	Groundwater Flow Direction																
			N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
	03/06/12	0.010	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
	06/11/12	0.050	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	09/06/12	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12/13/12	0.020	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	03/14/13	0.050	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	06/11/13	0.001	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	09/10/13	0.014	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
	12/12/13	0.018	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	03/04/14	0.010	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	06/12/14	0.020	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
	09/05/14	0.003	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
	12/22/14	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	03/16/15	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	06/11/15	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	09/09/15	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12/08/15	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	03/08/16	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	06/28/16	0.0067	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
	09/19/16	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12/02/16	Variable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.024 Average			0	0	0	0	0	1	34	1	16	0	21	2	3	0	0	0	
Explanation																			
NA = Not available																			
Number of Events = 83																			

Quarterly Summary Report, Fourth Quarter 2016
76 Station No. 5191/5043
449 Hegenberger Road, Oakland, CA
Antea Group Project No. I42705191



Appendix A

Previous Investigation and Site History Summary

PREVIOUS INVESTIGATION AND SITE HISTORY SUMMARY

October 1991 - Four soil samples were collected from the product pipe trenches at depths of approximately 3 feet below ground surface (bgs) during a dispenser island modification. The product pipe trenches were subsequently excavated to the groundwater depth at 4 to 4.5 feet bgs.

February 1992 - Three monitoring wells, MW-1 through MW-3, were installed at the site to depths ranging from 13.5 to 15 feet bgs.

August 1992 - Three additional monitoring wells, MW-4 through MW-6, were installed at the site to a depth of 13.5 feet bgs.

September 1994 - One 280-gallon waste-oil UST was removed from the site. The UST was made of steel, and no apparent holes or cracks were observed in the UST. One soil sample was collected from beneath the former UST at a depth of approximately 9 feet bgs. No petroleum hydrocarbons were reported.

January 1995 - Two additional monitoring wells, MW-9 and MW-10, were installed to depths of 13 and 15 feet bgs. In addition, monitoring wells MW-4 and MW-5 were destroyed by over-drilling the wells and backfilling with neat cement.

March 1995 - Two 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed from the site. Groundwater was encountered in the tank cavity at a depth of approximately 8.5 feet bgs. Soil samples contained total petroleum hydrocarbons as diesel (TPHd) and benzene, and TPH as gasoline (TPHg). Approximately 125,000 gallons of groundwater were pumped from the site for remediation and properly disposed off-site. Four fuel dispenser islands and associated product piping were also removed. Based on the results of the confirmation samples, the product dispenser islands were over excavated to approximately 6 feet bgs.

March-April 1995 - During demolition activities of the former station building, soil samples were collected from two excavations, which were subsequently over excavated. Confirmation samples contained petroleum hydrocarbons. An additional area on the south side of the former station building was excavated based on photo-ionization detector (PID) readings. Two monitoring wells, MW-1 and MW-2, were destroyed in order to allow for over excavation activities to extend to an area adjacent to the dispenser islands in the southeastern quadrant of the site. The excavated areas were subsequently backfilled with clean-engineered fill.

April 1997 - Two additional monitoring wells, MW-7 and MW-8, were installed off-site to the south and east on the neighboring property to a depth of 13 feet bgs. In addition, monitoring well MW-3, which was damaged during site renovation activities, was fully drilled out and reconstructed in the same borehole.

October 2003 - Site environmental consulting responsibilities were transferred to TRC.

April 8-9, 2005 - TRC conducted a 24-hour dual phase extraction (DPE) test at the site using monitoring well MW-6. The 24-hour DPE test was only moderately successful at removing vapor-phase petroleum hydrocarbons from the subsurface; therefore, TRC recommended DPE no longer be considered a viable remedial alternative for the site.

October 2007 - Site environmental consulting responsibilities were transferred to Delta Consultants.

December 2009 - Delta advanced two borings, B-4 and B-5, to depths of 20 feet bgs and 32 feet bgs, respectively. Analytical results from the soil and groundwater samples collected from these two borings indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

June 2010 – Delta installed two 4-inch diameter monitoring/extraction wells, MW-11 and MW-12, and two 2-inch diameter monitoring wells, MW-12A and MW-13, at the site. Analytical results from the soil and groundwater samples collected from the MW-12 and MW-12A boring locations indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

May 2011 – Antea Group (formally Delta Consultants) installed four 2-inch diameter monitoring wells, MW-14 through MW-17, and advanced one soil boring, B-6, at the site. All four monitoring wells were installed with ten feet of screen from 3 feet bgs to 13 feet bgs. Analytical results of soil samples collected during the monitoring well installation reported TPHg concentrations ranging from 1.0 milligrams per kilogram (mg/kg) (MW-14d13) to 2,490 mg/kg (B-6d9), benzene concentrations ranging from 0.67 mg/kg (B-6d21) to 26.4 mg/kg (B-6d9), toluene concentrations ranging from 0.2 mg/kg (MW-14d10) to 73.9 mg/kg (B-6d9), ethylbenzene concentrations ranging from 0.037 mg/kg (MW-14d13) to 58.1 mg/kg (B-6d9), total xylenes concentrations ranging from 0.066 mg/kg (MW-14d13) to 230 mg/kg (B-6d9), methyl tertiary-butyl ether (MTBE) concentrations ranging from 0.015 mg/kg (MW-15d13) to 0.19 mg/kg (MW-15d8), tertiary-butyl alcohol (TBA) concentrations ranging from 0.014 mg/kg (MW-16d8 and B-6d21) to 0.16 mg/kg (MW-15d8), and lead concentrations ranging from 5.5 mg/kg (MW-16d13) to 16.3 mg/kg (MW-17d9). Diesel range organics (DRO) and DRO with silica gel concentrations were reported; however, all of the results did not match the laboratory standard for diesel. Concentrations of DRO ranged from 2.9 mg/kg (MW-17d13) to 258 mg/kg (B-6d14) and DRO with silica gel concentrations ranged from 2.5 mg/kg (MW-17d13) to 250 mg/kg (B-6d14).

March 2012 – Antea Group advanced five soil borings (HPB-1 through HPB-5) at the site. The borings were advanced using direct push technology. The borings were used to obtain a hydraulic profile of the substrate beneath the site. The data obtained during the investigation will be used to determine the best path forward in terms of remediation.

July 2013 – Antea Group advanced ten soil borings (SB-1 through SB-10) at the site. The borings were advanced using direct push technology. The borings were used to delineate petroleum hydrocarbon impacted soil around

monitoring well MW-6. Results of the investigation can be found in the *Site Investigation Report*, dated January 9, 2014.

June 2014 – Antea Group destroyed monitoring wells MW-10, MW-12, MW-12A, and MW-17 by pressure grouting. The wells were destroyed in preparation for on-site soil excavation activities.

September 2014 – Antea Group advanced two (2) cone penetration test (CPT) borings CPT-1 and CPT-2 in preparation for soil excavations on site. Soil and groundwater samples were not collected. Data from the CPT borings was used to help design shoring for excavations. Antea Group advanced three (3) off-site soil borings, SB-13 through SB-15. Soil and grab-groundwater samples were collected from the borings.

July 2015 – Antea Group destroyed on-site monitoring wells MW-6 and MW-14 in preparation for on-site soil excavation activities. On-site soil borings were advanced for waste characterization (WC-1 to WC-3) and delineate soil (SB-16 to SB-18) concentrations in the vicinity of the proposed soil excavation. Two off-site soil borings were advanced (SB-11 and SB-12) for delineation down-gradient.

January 2015 – Antea Group destroyed off-site monitoring wells MW-7 and MW-8 by drill-out.

May through July 2016 – Antea Group performed a series of remedial excavations on-site. The excavation focused on removing soil from two areas of hydrocarbon impact to the soil (secondary source areas) identified during previous investigations, one on the east side of the site between the dispensers and Hegenberger Road, and the other in the southwest corner of the site. A total of 1665 tons of soil were removed from the site during excavation activities. Approximately 1,400 pounds of OCR-A was spread throughout the entire excavation area to facilitate in-situ aerobic biodegradation.

SENSITIVE RECEPTORS

April 24, 2006, TRC completed a sensitive receptor survey for the site. According to the Department of Water Resources (DWR) records, three water supply wells are located within one-half mile of the site. The closest well is an irrigation well, reported to be, approximately 1,080 feet southeast of the site. In addition, two surface water bodies were observed within a one-half mile radius of the site. San Leandro Creek is located approximately 1,400 feet southwest of the site and flows into the San Leandro Bay. Elmhurst Creek is located approximately 2,220 feet north of the site and also flows into the San Leandro Bay.

Current Consultant: **Antea Group**

Quarterly Summary Report, Fourth Quarter 2016
76 Station No. 5191/5043
449 Hegenberger Road, Oakland, CA
Antea Group Project No. I42705191



Appendix B

Blaine Tech Groundwater Sampling Field Data Sheets

Well-Head Inspection & Well Gauging Form

Antea Group Project No: 2705191 Site Address: 449 HILLENBERGER RD, OAKLAND, CA
 Field Technician: WILLIAM WONG / BLAINE TECH SERVICES Date: 12-2-16 Weather: Sunny
(Print Full Name & Company*)

Well Condition

Sample Order	Field Point	Bolts	Seal	Lid Secure	Lock	Expanding Cap	Water in Well Box	Well Casing Dia.	Time Gauged	Depth to Water (Feet)	Depth to Bottom (Feet)	Depth to LNAPL (Feet)	LNAPL Thickness (Feet)	Comments
4	MW-3	R	Y	Y	Y	Y	Y	2	0943	2.59	13.93	---	---	REPLACED IN BOLTS (5/16")
1	MW-9	R	Y	Y	Y	Y	N	2	0925	0.97	12.56	---	---	1/3 TABS; 1 (9/16") BOLT REPLACED.
5	MW-11	Y	Y	Y	Y	Y	N	4	0949	2.23	19.62	---	---	
2	MW-13	Y	Y	Y	Y	Y	N	2	0931	3.88	14.66	---	---	
6	MW-15	Y	Y	Y	Y	Y	N	2	0959	2.62	12.73	---	---	
3	MW-16	Y	Y	Y	Y	Y	Y	2	0937	3.19	12.70	---	---	

Notes: _____

** All well caps opened at least 15 minutes or longer before gauging wells.

CIRCLE ONE: YES or NO**



*Form provided by Antea Group

Note: Use G=good and P=poor for well condition

Groundwater Sampling Form

Site Address: <u>449 HELEN</u>	
Project No: <u>2705191</u>	Field Technician: <u>MW</u>
Field Point: <u>MW-3</u>	Date: <u>12-2-16</u>
Depth to Water (DTW) (ft bgs): <u>2.59</u>	Well Diameter (in): <u>(2) 4 6 8</u>
Depth to LNAPL (ft bgs): <u>—</u>	Thickness of LNAPL (ft): <u>—</u>
Total Depth of Well (ft bgs): <u>13.93</u>	Water Column Height (ft): <u>11.34</u>

Purging Info and Calculations:

Purge Method: Low-Flow <u>3 casing volumes</u> Other: _____	Purge Equipment: Disposable Bailer Electric Submersible Peristaltic Pump Bladder Pump Other: _____	Sample Collection Method: Disposable Bailer <u>w/ BED</u> Extraction Port Dedicated Tubing Disposable Tubing Other: _____
Water Column Height (ft): <u>11.34</u>	X Conversion Factor (gal/ft): <u>0.17</u>	= Casing Volume (gal): <u>1.9</u>
Casing Volume (gal): <u>1.9</u>	X Specified Volumes: <u>3</u>	= Calculated Purge (gal): <u>5.7</u>

Conversion Factors (gal/ft): 2" = 0.17 4" = 0.66 6" = 1.5 8" = 2.6 Other = radius² * 0.163

Purge:		Start Time: <u>1134</u>		Stop Time: _____					
Time	Temp (°C)	pH	Conductivity (µS/cm)	ORP (mV)	Turbidity (NTU)	D.O. (mg/L)	Volume Purged (gal)	Water Level (for Low-Flow only)	
Pre-Purge									
<u>1135</u>	<u>22.3</u>	<u>7.50</u>	<u>2190</u>	<u>-157.6</u>	<u>106</u>	<u>2.01</u>	<u>0.9</u>		
<u>1136</u>	<u>22.2</u>	<u>7.40</u>	<u>2199</u>	<u>-154.2</u>	<u>81</u>	<u>2.27</u>	<u>1.9</u>		
<u>1137</u>	<u>21.6</u>	<u>7.30</u>	<u>2208</u>	<u>-151.8</u>	<u>63</u>	<u>2.39</u>	<u>2.8</u>		
<u>1138</u>	<u>21.2</u>	<u>7.20</u>	<u>2229</u>	<u>-146.6</u>	<u>47</u>	<u>2.46</u>	<u>3.8</u>		
<u>1139</u>	<u>21.3</u>	<u>7.12</u>	<u>2412</u>	<u>-144.3</u>	<u>42</u>	<u>2.39</u>	<u>4.7</u>		
<u>1140</u>	<u>21.4</u>	<u>7.05</u>	<u>2511</u>	<u>-142.5</u>	<u>37</u>	<u>2.31</u>	<u>5.7</u>		
Post-Purge									
Did Well dewater? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Total Purge volume (gal): <u>5.7</u>							

Other Comments: 807:4.86
SAMPLED @ 7.86 (2HR)

Sample Info:	
Sample ID: <u>MW-3-20161230</u>	Sample Date and Time: <u>12-2-16 / 1400</u>
Selected Analysis: <u>Slc Saw</u>	

This form was provided by Antea Group and completed by: (Print Full Name) William Wong, an employee of Blaine Tech Services, Inc.

Signature: [Signature] Date: 12-2-16



LNAPL= light non-aqueous phase liquids
 bgs = below ground surface
 ORP = Oxidation-Reduction Potential
 D.O. = dissolved oxygen

gal = gallon/s
 temp = temperature
 NTU = Nephelometric Turbidity Units
 mV = millivolts

Groundwater Sampling Form

Site Address:	449 HELEN BARBER		
Project No:	2705191	Field Technician:	WW
Field Point:	MW-9	Date:	12-2-16
Depth to Water (DTW) (ft bgs):	0.97	Well Diameter (in):	② 4 6 8
Depth to LNAPL (ft bgs):	—	Thickness of LNAPL (ft):	—
Total Depth of Well (ft bgs):	12.56	Water Column Height (ft):	11.59

Purging Info and Calculations:

Purge Method: Low-Flow <u>Sealing volumes</u> Other: _____	Purge Equipment: Disposable Bailer Electric Submersible Peristaltic Pump Bladder Pump Other: _____	Sample Collection Method: Disposable Bailer w/B&D Extraction Port Dedicated Tubing Disposable Tubing Other: _____
Water Column Height (ft): <u>11.59</u>	X Conversion Factor (gal/ft): <u>0.17</u>	= Casing Volume (gal): <u>2.0</u>
Casing Volume (gal): <u>2.0</u>	X Specified Volumes: <u>3</u>	= Calculated Purge (gal): <u>6.0</u>
Conversion Factors (gal/ft): 2" = 0.17 4" = 0.66 6" = 1.5 8" = 2.6 Other = radius ² * 0.163		

Purge: Start Time: <u>1022</u>		Stop Time: <u>1028</u>						
Time	Temp (°C)	pH	Conductivity (µS/cm)	ORP (mV)	Turbidity (NTU)	D.O. (mg/L)	Volume Purged (gal)	Water Level (for Low-Flow only)
Pre-Purge				—				
1023	22.6	8.12	1966	-137.8	72	1.70	1	
1024	22.5	7.96	2360	-135.6	69	2.09	2	
1025	22.4	7.72	2618	-133.2	69	2.50	3	
1026	22.3	7.44	2984	-131.6	68	2.91	4	
1027	22.1	7.39	2996	-128.4	63	3.07	5	
1028	22.0	7.34	3014	-125.3	58	3.16	6	
Post-Purge								

Did Well dewater? Yes No Total Purge volume (gal): 6

Other Comments: 80% : 3.29
SAMPLED @ 1.04

Sample Info:	
Sample ID: <u>MW-9-20161230</u>	Sample Date and Time: <u>12-2-16 / 1340</u>
Selected Analysis: <u>see saw</u>	

This form was provided by Antea Group and completed by: (Print Full Name) William Wong, an employee of Blaine Tech Services, Inc.

Signature: [Signature] Date: 12-2-16



LNAPL= light non-aqueous phase liquids
 bgs = below ground surface
 ORP = Oxidation-Reduction Potential
 D.O.= dissolved oxygen

gal = gallon/s
 temp = temperature
 NTU = Nephelometric Turbidity Units
 mV = millivolts

Groundwater Sampling Form

Site Address: <u>249 HEBERBERGER RD, OAKLAND, CA</u>	
Project No: <u>29 05191</u>	Field Technician: <u>WML</u>
Field Point: <u>MW-11</u>	Date: <u>12-2-16</u>
Depth to Water (DTW) (ft bgs): <u>2.23</u>	Well Diameter (in): <u>2 (4) 6 8</u>
Depth to LNAPL (ft bgs): <u>—</u>	Thickness of LNAPL (ft): <u>—</u>
Total Depth of Well (ft bgs): <u>19.62</u>	Water Column Height (ft): <u>17.39</u>

Purging Info and Calculations:

Purge Method: Low-Flow <u>3 casing volumes</u> Other: _____	Purge Equipment: Disposable Bailor Electric Submersible Peristaltic Pump Bladder Pump Other: _____	Sample Collection Method: Disposable Bailor <u>W/ BEO</u> Extraction Port Dedicated Tubing Disposable Tubing Other: _____
Water Column Height (ft): <u>17.39</u> X Conversion Factor (gal/ft): <u>0.66</u> = Casing Volume (gal): <u>11.5</u> Casing Volume (gal): <u>11.5</u> X Specified Volumes: <u>3</u> = Calculated Purge (gal): <u>34.5</u>		

Conversion Factors (gal/ft): 2" = 0.17 4" = 0.66 6" = 1.5 8" = 2.6 Other = radius² * 0.163

Purge:		Start Time: <u>1153</u>		Stop Time:					
Time	Temp (°C)	pH	Conductivity (µS/cm)	ORP (mV)	Turbidity (NTU)	D.O. (mg/L)	Volume Purged (gal)	Water Level (for Low-Flow only)	
Pre-Purge									
<u>1156</u>	<u>21.5</u>	<u>7.76</u>	<u>1460</u>	<u>-171.3</u>	<u>54</u>	<u>2.91</u>	<u>5.8</u>		
<u>1158</u>	<u>21.7</u>	<u>7.48</u>	<u>1535</u>	<u>-165.9</u>	<u>46</u>	<u>2.32</u>	<u>11.5</u>		
<u>1200</u>	<u>21.3</u>	<u>7.42</u>	<u>1549</u>	<u>-164.6</u>	<u>30</u>	<u>1.88</u>	<u>17.3</u>		
<u>1202</u>	<u>21.9</u>	<u>7.37</u>	<u>1565</u>	<u>-163.9</u>	<u>14</u>	<u>1.44</u>	<u>23.0</u>		
<u>1205</u>	<u>22.0</u>	<u>7.39</u>	<u>1566</u>	<u>-164.0</u>	<u>11</u>	<u>1.43</u>	<u>28.8</u>		
<u>1207</u>	<u>22.3</u>	<u>7.40</u>	<u>1567</u>	<u>-164.8</u>	<u>8</u>	<u>1.42</u>	<u>34.5</u>		
Post-Purge									

Did Well dewater? Yes No Total Purge volume (gal): 34.5

Other Comments: 80% = 5.71
SAMPLE DTW = 3.19

Sample Info:	
Sample ID: <u>MW-11.29161230</u>	Sample Date and Time: <u>12-2-16 / 1210</u>
Selected Analysis: <u>see saw</u>	

This form was provided by Antea Group and completed by: (Print Full Name) WILLIAM WOLFE, an employee of Blaine Tech Services, Inc.

Signature: [Signature] Date: 12-2-16

Groundwater Sampling Form

Site Address: 149 HELEN BERBER RD, OAKLAND, CA	
Project No: 2705191	Field Technician: MM
Field Point: MW-13	Date: 12-2-16
Depth to Water (DTW) (ft bgs): 3.88	Well Diameter (in): ② 4 6 8
Depth to LNAPL (ft bgs): —	Thickness of LNAPL (ft): —
Total Depth of Well (ft bgs): 14.60	Water Column Height (ft): 10.78

Purging Info and Calculations:

Purge Method: Low-Flow <u>3 casing volumes</u> Other: _____	Purge Equipment: Disposable Bailer <u>Electric Submersible</u> Peristaltic Pump Bladder Pump Other: _____	Sample Collection Method: <u>Disposable Bailer w/ BED</u> Extraction Port Dedicated Tubing Disposable Tubing Other: _____
Water Column Height (ft): 10.78	X Conversion Factor (gal/ft): 0.17	= Casing Volume (gal): 1.8
Casing Volume (gal): 1.8	X Specified Volumes: 3	= Calculated Purge (gal): 5.4

Conversion Factors (gal/ft): 2" = 0.17 4" = 0.66 6" = 1.5 8" = 2.6 Other = radius² * 0.163

Purge:		Start Time: 1030		Stop Time: 1042					
Time	Temp (°C)	pH	Conductivity (µS/cm)	ORP (mV)	Turbidity (NTU)	D.O. (mg/L)	Volume Purged (gal)	Water Level (for Low-Flow only)	
Pre-Purge									
1037	19.9	7.52	3082	-142.3	292	2.30	0.9		
1038	19.5	7.54	3060	-144.9	117	2.39	1.8		
1039	19.1	7.55	3042	-145.0	89	2.90	2.7		
1040	18.7	7.57	3038	-145.0	68	3.00	3.6		
1041	18.9	7.55	3117	-145.0	53	2.89	4.5		
1042	19.0	7.53	3341	-145.4	49	2.71	5.4		
Post-Purge									

Did Well dewater? Yes No Total Purge volume (gal): **5.4**

Other Comments: **80% @ 6.04**
SAMPLE @ 6.04

Sample Info:

Sample ID: MW-13-20161230	Sample Date and Time: 12-2-16 / 1055
Selected Analysis: SEE SOW	

This form was provided by Antea Group and completed by: (Print Full Name) **William Wong**, an employee of Blaine Tech Services, Inc.

Signature: Date: **12-2-16**

Groundwater Sampling Form

Site Address: <u>449 MELLEN BERGER RD, OAKLAND, CA</u>	
Project No: <u>2705191</u>	Field Technician: <u>WW</u>
Field Point: <u>MW-15</u>	Date: <u>12-2-16</u>
Depth to Water (DTW) (ft bgs): <u>2.62</u>	Well Diameter (in): <u>② 4 6 8</u>
Depth to LNAPL (ft bgs): <u>—</u>	Thickness of LNAPL (ft): <u>—</u>
Total Depth of Well (ft bgs): <u>12.62-12.73</u>	Water Column Height (ft): <u>10.11</u>

Purging Info and Calculations:

Purge Method: Low-Flow <u>3 casing volumes</u> Other: _____	Purge Equipment: Disposable Bailer Electric Submersible Peristaltic Pump Bladder Pump Other: _____	Sample Collection Method: Disposable Bailer <u>W/BFO</u> Extraction Port Dedicated Tubing Disposable Tubing Other: _____
Water Column Height (ft): <u>10.11</u>	X Conversion Factor (gal/ft): <u>0.17</u>	= Casing Volume (gal): <u>1.7</u>
Casing Volume (gal): <u>1.7</u>	X Specified Volumes: <u>3</u>	= Calculated Purge (gal): <u>5.1</u>

Conversion Factors (gal/ft): 2" = 0.17 4" = 0.66 6" = 1.5 8" = 2.6 Other = radius² * 0.163

Purge: Start Time: <u>12:27</u>		Stop Time: _____						
Time	Temp (°C)	pH	Conductivity (µS/cm)	ORP (mV)	Turbidity (NTU)	D.O. (mg/L)	Volume Purged (gal)	Water Level (for Low-Flow only)
Pre-Purge								
<u>1229</u>	<u>18.9</u>	<u>7.38</u>	<u>1859</u>	<u>-133.3</u>	<u>26</u>	<u>1.89</u>	<u>0.9</u>	
<u>1230</u>	<u>18.9</u>	<u>7.30</u>	<u>1735</u>	<u>-131.0</u>	<u>23</u>	<u>1.77</u>	<u>1.7</u>	
<u>1231</u>	<u>19.0</u>	<u>7.22</u>	<u>1611</u>	<u>-129.8</u>	<u>20</u>	<u>1.65</u>	<u>2.6</u>	
<u>1232</u>	<u>19.0</u>	<u>7.10</u>	<u>1487</u>	<u>-128.6</u>	<u>19</u>	<u>1.53</u>	<u>3.4</u>	
<u>1233</u>	<u>19.1</u>	<u>7.00</u>	<u>1360</u>	<u>-126.4</u>	<u>14</u>	<u>1.36</u>	<u>4.3</u>	
<u>1234</u>	<u>19.1</u>	<u>6.92</u>	<u>1238</u>	<u>-125.5</u>	<u>11</u>	<u>1.26</u>	<u>5.1</u>	
Post-Purge								

Did Well dewater? Yes No Total Purge volume (gal): 5.1

Other Comments:

60%: 4.64
SAMPLE DTW: 7.76 2nd 2HR

Sample Info:

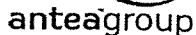
Sample ID: <u>MW-15-20161230</u>	Sample Date and Time: <u>12-2-16 / 1235</u>
Selected Analysis: <u>SO₄ SW</u>	

This form was provided by Antea Group and completed by: (Print Full Name)

WILLIAM WONG, an employee of Blaine Tech Services, Inc.

Signature: [Signature]

Date: 12-2-16



Antea™ Group, 1-800-477-7411

LNAPL= light non-aqueous phase liquids
 bgs = below ground surface
 ORP = Oxidation-Reduction Potential
 D.O.= dissolved oxygen

gal = gallon/s
 temp = temperature
 NTU = Nephelometric Turbidity Units
 mV = millivolts

Groundwater Sampling Form

Site Address:	449 Helen Barber Rd, Oakland, CA		
Project No:	2705191	Field Technician:	MW
Field Point:	MW-16	Date:	12-2-16
Depth to Water (DTW) (ft bgs):	3.9	Well Diameter (in):	(2) 4 6 8
Depth to LNAPL (ft bgs):	—	Thickness of LNAPL (ft):	—
Total Depth of Well (ft bgs):	12.70	Water Column Height (ft):	9.51

Purging Info and Calculations:

Purge Method: Low-Flow <u>3 casing volumes</u> Other: _____	Purge Equipment: Disposable Bailer Electric Submersible Peristaltic Pump Bladder Pump Other: _____	Sample Collection Method: Disposable Bailer w/ BED Extraction Port Dedicated Tubing Disposable Tubing Other: _____
Water Column Height (ft): <u>9.51</u>	X Conversion Factor (gal/ft): <u>0.17</u>	= Casing Volume (gal): <u>1.6</u>
Casing Volume (gal): <u>1.6</u>	X Specified Volumes: <u>3</u>	= Calculated Purge (gal): <u>4.8</u>

Conversion Factors (gal/ft): 2" = 0.17 4" = 0.66 6" = 1.5 8" = 2.6 Other = radius² * 0.163

Purge:		Start Time: <u>1100</u>		Stop Time: <u>1106</u>					
Time	Temp (°C)	pH	Conductivity (µS/cm)	ORP (mV)	Turbidity (NTU)	D.O. (mg/L)	Volume Purged (gal)	Water Level (for Low-Flow only)	
Pre-Purge									
1101	21.0	7.97	3461	-136.0	103	2.24	0.8		
1102	21.1	7.87	3442	-135.6	91	1.94	1.6		
1103	21.2	7.72	3421	-133.2	67	1.67	2.4		
1104	21.3	7.55	3415	-132.4	44	1.34	3.2		
1105	21.4	7.50	3400	-130.7	30	1.30	4.0		
1106	21.4	7.45	3370	-128.6	15	1.27	4.8		
Post-Purge									

Did Well dewater? Yes No Total Purge volume (gal): 4.8

Other Comments: 80% 5.09
sampled @ 4.89

Sample Info:	
Sample ID: MW-16-20161230	Sample Date and Time: 12-2-16 / 1350
Selected Analysis: <u>all saw</u>	

This form was provided by Antea Group and completed by: (Print Full Name) William Womb, an employee of Blaine Tech Services, Inc.

Signature: Date: 12-2-16



COP ELT CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

4Q16 GW Event

Required Lab Information:	Required Project Information:	Required Invoice Information:
Lab Name: Calscience	Site ID #: 2705191 Task: WG_Q_201608	Send Invoice to: Sandy Hayes
Address: 7440 Lincoln Way	AnteaGrp proj#	Address: 11050 White Rock Road, Suite 110
Garden Grove, CA 92841	Site Address: 449 Hegenberger	City/State: Rancho Cordova CA 95670 Phone #: 916-638-2085
Lab PM: Terri Chang	City: Oakland State: CA 94621	Reimbursement project? <input type="checkbox"/> Non-reimbursement project? <input checked="" type="checkbox"/> Mark one
Phone/Fax: 714-895-5494	AG PM Name: Dacre Bush	Send EDD to: agdataview.us@anteagroup.com
Lab PM email: Terrichang@eurofinsus.com	Phone/Fax: 805-295-9071	CC Hardcopy report to: Jerilyn.thao@anteagroup.com
Applicable Lab Quote #:	AG PM Email: Dacre.bush@anteagroup.com	CC Hardcopy report to: Jon.fillingame@anteagroup.com
Turn around time (days) 10		QC level Required: Standard
Special <input type="checkbox"/>		Mark one
NJ Reduced Deliverable Package? <input type="checkbox"/>		MA MCP Cert? <input type="checkbox"/> CT RCP Cert? <input type="checkbox"/>
Lab Project ID (lab use)		Requested Analyses

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / . -) Samples IDs MUST BE UNIQUE	Valid Matrix Codes MATRIX: DRINKING WATER, GROUND WATER, WASTE WATER, FREE PRODUCT, SOL, OIL, WPE, AMBIENT AIR, SVE AIR, SOL GAS MATRIX: WP, SURFACE WATER, WATER OC, SLUDGE, RINSEATE, OTHER, ANIMAL TISSUE, W, WS, WS, SL, SL, WH, OT, TA	MATRIX CODE	SAMPLE TYPE G=GRAB C=COMP	SAMPLE DATE	SAMPLE TIME	#OF CONTAINERS	FIELD FILTERED? (Y/N)	Preservatives								Requester/Signature	Analysis	Comments/Lab Sample I.D.				
									Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2SO3	Methanol	Other							
1	MW-11_20161230		WG	G	12-2-16	1210	3	Z			X						X	X	X	X			
2	MW-13_20161230		WG	G	↓	1055	3	Z			X						X	X	X	X			
3	MW-15_20161230		WG	G		1235	3	Z				X						X	X	X	X		
4	MW-16_20161230		WG	G		1350	3	Z				X						X	X	X	X		
5	MW-3_20161230		WG	G		1400	3	Z				X						X	X	X	X		
6	MW-9_20161230		WG	G		1340	3	Z				X						X	X	X	X		
7																							
8																							
9																							
10																							
11																							
12																							

Additional Comments/Special Instructions: Global ID: T0600101476	RELINQUISHED BY / AFFILIATION <i>[Signature]</i>	DATE 12-2-16	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Sample Receipt Conditions			
							Y/N	Y/N	Y/N	
							Y/N	Y/N	Y/N	
							Y/N	Y/N	Y/N	
							Y/N	Y/N	Y/N	
SHIPPING METHOD: (mark as appropriate) <input checked="" type="checkbox"/> GSO				SAMPLER NAME AND SIGNATURE WILLIAM WINK <i>[Signature]</i>			Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
UPS COURIER FEDEX	PRINT Name of SAMPLER:	SIGNATURE of SAMPLER:	DATE Signed	Time						
US MAIL			12-2-16	1505						

Quarterly Summary Report, Fourth Quarter 2016
76 Station No. 5191/5043
449 Hegenberger Road, Oakland, CA
Antea Group Project No. I42705191



Appendix C

Certified Laboratory Analytical Report and Data Validation Form



Calscience



WORK ORDER NUMBER: 16-12-0293

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Antea Group

Client Project Name: 2705191

Attention: Dacre Bush
11050 White Rock Road
Suite 110
Rancho Cordova, CA 95670-6001

Approved for release on 12/09/2016 by:
Terri Chang
Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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Client Project Name: 2705191
Work Order Number: 16-12-0293

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Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 12/03/16. They were assigned to Work Order 16-12-0293.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of ≤ 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Calscience

Sample Summary

Client: Antea Group	Work Order:	16-12-0293
11050 White Rock Road, Suite 110	Project Name:	2705191
Rancho Cordova, CA 95670-6001	PO Number:	
	Date/Time Received:	12/03/16 10:10
	Number of Containers:	30

Attn: Dacre Bush

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
MW-11_20161230	16-12-0293-1	12/02/16 12:10	5	Aqueous
MW-13_20161230	16-12-0293-2	12/02/16 10:55	5	Aqueous
MW-15_20161230	16-12-0293-3	12/02/16 12:35	5	Aqueous
MW-16_20161230	16-12-0293-4	12/02/16 13:50	5	Aqueous
MW-3_20161230	16-12-0293-5	12/02/16 14:00	5	Aqueous
MW-9_20161230	16-12-0293-6	12/02/16 13:40	5	Aqueous


 Return to Contents



Calscience

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 3510C
Method: EPA 8015B (M)
Units: ug/L

Project: 2705191

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11_20161230	16-12-0293-1-E	12/02/16 12:10	Aqueous	GC 45	12/06/16	12/08/16 23:41	161206B15

Comment(s): - The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel	ND	46	1.00	SG

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	104	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-13_20161230	16-12-0293-2-E	12/02/16 10:55	Aqueous	GC 45	12/06/16	12/09/16 00:02	161206B15

Comment(s): - The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel	ND	45	1.00	SG

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	98	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-15_20161230	16-12-0293-3-E	12/02/16 12:35	Aqueous	GC 45	12/06/16	12/09/16 00:25	161206B15

Comment(s): - The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel	240	46	1.00	SG,HD

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	102	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-16_20161230	16-12-0293-4-E	12/02/16 13:50	Aqueous	GC 45	12/06/16	12/09/16 00:47	161206B15

Comment(s): - The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel	230	45	1.00	SG,HD

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	95	68-140	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 3510C
Method: EPA 8015B (M)
Units: ug/L

Project: 2705191

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3_20161230	16-12-0293-5-E	12/02/16 14:00	Aqueous	GC 45	12/06/16	12/09/16 01:08	161206B15

Comment(s): - The sample extract was subjected to Silica Gel treatment prior to analysis.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>
TPH as Diesel	ND	48	1.00	SG

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
n-Octacosane	97	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-9_20161230	16-12-0293-6-E	12/02/16 13:40	Aqueous	GC 45	12/06/16	12/09/16 01:28	161206B15

Comment(s): - The sample extract was subjected to Silica Gel treatment prior to analysis.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>
TPH as Diesel	ND	45	1.00	SG

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
n-Octacosane	102	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-15-304-1586	N/A	Aqueous	GC 45	12/06/16	12/08/16 21:12	161206B15

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>
TPH as Diesel	ND	50	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
n-Octacosane	107	68-140	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
 11050 White Rock Road, Suite 110
 Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
 Work Order: 16-12-0293
 Preparation: EPA 5030C
 Method: GC/MS / EPA 8260B
 Units: ug/L

Project: 2705191

Page 1 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11_20161230	16-12-0293-1-A	12/02/16 12:10	Aqueous	GC/MS LL	12/05/16	12/05/16 16:19	161205L001

Parameter	Result	RL	DF	Qualifiers
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	6.9	1.0	1.00	
Tert-Butyl Alcohol (TBA)	ND	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	102	78-126	
1,2-Dichloroethane-d4	101	75-135	
Toluene-d8	102	80-120	
Toluene-d8-TPPH	102	88-112	
1,4-Bromofluorobenzene	96	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: 2705191

Page 2 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-13_20161230	16-12-0293-2-A	12/02/16 10:55	Aqueous	GC/MS LL	12/05/16	12/05/16 16:49	161205L001

Parameter	Result	RL	DF	Qualifiers
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	19	1.0	1.00	
Tert-Butyl Alcohol (TBA)	63	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	103	78-126	
1,2-Dichloroethane-d4	102	75-135	
Toluene-d8	103	80-120	
Toluene-d8-TPPH	102	88-112	
1,4-Bromofluorobenzene	96	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: 2705191

Page 3 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-15_20161230	16-12-0293-3-A	12/02/16 12:35	Aqueous	GC/MS LL	12/05/16	12/05/16 17:19	161205L001

Parameter	Result	RL	DF	Qualifiers
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	33	1.0	1.00	
Tert-Butyl Alcohol (TBA)	24	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	98	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	105	78-126	
1,2-Dichloroethane-d4	104	75-135	
Toluene-d8	104	80-120	
Toluene-d8-TPPH	103	88-112	
1,4-Bromofluorobenzene	95	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: 2705191

Page 4 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-16_20161230	16-12-0293-4-A	12/02/16 13:50	Aqueous	GC/MS LL	12/05/16	12/05/16 17:49	161205L001

Parameter	Result	RL	DF	Qualifiers
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	7.5	1.0	1.00	
Tert-Butyl Alcohol (TBA)	140	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	104	78-126	
1,2-Dichloroethane-d4	104	75-135	
Toluene-d8	103	80-120	
Toluene-d8-TPPH	102	88-112	
1,4-Bromofluorobenzene	96	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: 2705191

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3_20161230	16-12-0293-5-A	12/02/16 14:00	Aqueous	GC/MS LL	12/05/16	12/05/16 18:19	161205L001

Parameter	Result	RL	DF	Qualifiers
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	8.7	1.0	1.00	
Tert-Butyl Alcohol (TBA)	24	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	81	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	103	78-126	
1,2-Dichloroethane-d4	103	75-135	
Toluene-d8	102	80-120	
Toluene-d8-TPPH	102	88-112	
1,4-Bromofluorobenzene	99	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: 2705191

Page 6 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-9_20161230	16-12-0293-6-A	12/02/16 13:40	Aqueous	GC/MS LL	12/05/16	12/05/16 18:49	161205L001

Parameter	Result	RL	DF	Qualifiers
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	1.0	1.00	
Tert-Butyl Alcohol (TBA)	ND	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	104	78-126	
1,2-Dichloroethane-d4	103	75-135	
Toluene-d8	104	80-120	
Toluene-d8-TPPH	103	88-112	
1,4-Bromofluorobenzene	97	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: 2705191

Page 7 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-767-7603	N/A	Aqueous	GC/MS LL	12/05/16	12/05/16 12:19	161205L001

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>
Benzene	ND	0.50	1.00	
Ethylbenzene	ND	1.0	1.00	
Toluene	ND	1.0	1.00	
p/m-Xylene	ND	1.0	1.00	
o-Xylene	ND	1.0	1.00	
Xylenes (total)	ND	1.0	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	1.0	1.00	
Tert-Butyl Alcohol (TBA)	ND	10	1.00	
Ethanol	ND	100	1.00	
Gasoline Range Organics (C6-C12)	ND	50	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
Dibromofluoromethane	102	78-126	
1,2-Dichloroethane-d4	98	75-135	
Toluene-d8	101	80-120	
Toluene-d8-TPPH	100	88-112	
1,4-Bromofluorobenzene	98	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

Quality Control - Spike/Spike Duplicate

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Project: 2705191

Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
16-11-2486-8	Sample	Aqueous	GC/MS LL	12/05/16	12/05/16 12:49	161205S001
16-11-2486-8	Matrix Spike	Aqueous	GC/MS LL	12/05/16	12/05/16 13:19	161205S001
16-11-2486-8	Matrix Spike Duplicate	Aqueous	GC/MS LL	12/05/16	12/05/16 13:49	161205S001

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Benzene	ND	50.00	56.29	113	55.40	111	74-122	2	0-21	
Ethylbenzene	ND	50.00	57.71	115	56.54	113	77-125	2	0-24	
Toluene	ND	50.00	57.44	115	57.32	115	72-126	0	0-23	
p/m-Xylene	ND	100.0	117.4	117	115.3	115	63-129	2	0-25	
o-Xylene	ND	50.00	57.99	116	57.56	115	62-128	1	0-24	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	51.67	103	51.80	104	68-134	0	0-21	
Tert-Butyl Alcohol (TBA)	253.7	250.0	529.5	110	515.8	105	65-143	3	0-30	
Ethanol	ND	500.0	648.4	130	637.1	127	34-178	2	0-58	

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RPD: Relative Percent Difference. CL: Control Limits



Calscience

Quality Control - LCS/LCSD

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: 2705191

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-15-304-1586	LCS	Aqueous	GC 45	12/06/16	12/08/16 21:33	161206B15			
099-15-304-1586	LCSD	Aqueous	GC 45	12/06/16	12/08/16 21:54	161206B15			
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TPH as Diesel	2000	2278	114	2259	113	75-117	1	0-13	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS/LCSD

Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670-6001

Date Received: 12/03/16
Work Order: 16-12-0293
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Project: 2705191

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Quality Control Sample ID	Type	Matrix		Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-767-7603	LCS	Aqueous		GC/MS LL	12/05/16	12/05/16 10:45	161205L001		
099-12-767-7603	LCSD	Aqueous		GC/MS LL	12/05/16	12/05/16 11:15	161205L001		
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Benzene	50.00	49.99	100	N/A	N/A	80-120	N/A	0-20	
Ethylbenzene	50.00	51.41	103	N/A	N/A	80-123	N/A	0-20	
Toluene	50.00	51.61	103	N/A	N/A	80-120	N/A	0-20	
p/m-Xylene	100.0	105.0	105	N/A	N/A	75-123	N/A	0-25	
o-Xylene	50.00	52.92	106	N/A	N/A	74-122	N/A	0-25	
Methyl-t-Butyl Ether (MTBE)	50.00	50.46	101	N/A	N/A	69-129	N/A	0-22	
Tert-Butyl Alcohol (TBA)	250.0	278.6	111	N/A	N/A	69-129	N/A	0-25	
Ethanol	500.0	667.1	133	N/A	N/A	42-168	N/A	0-20	
Gasoline Range Organics (C6-C12)	1000	1122	112	1118	112	65-135	0	0-30	

Sample Analysis Summary Report

Work Order: 16-12-0293

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<u>Method</u>	<u>Extraction</u>	<u>Chemist ID</u>	<u>Instrument</u>	<u>Analytical Location</u>
EPA 8015B (M)	EPA 3510C	421	GC 45	1
GC/MS / EPA 8260B	EPA 5030C	867	GC/MS LL	2

Glossary of Terms and Qualifiers

Work Order: 16-12-0293

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.



COP ELT CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

16-12-0293

4Q16 GW Event

Required Lab Information: Lab Name: CalciScience
Required Project Information: Site ID #: 2705191 Task: WG_Q_201606
Required Invoice Information: Send Invoice to: Sandy Hayes
Address: 7440 Lincoln Way
Site Address: 449 Hegenberger
City/State: Oakland CA 94621
Reimbursement project? Non-reimbursement project?
Lab PM: Terri Chang
AG PM Name: Dacre Bush
Send EDD to: agdataview.us@anteagroup.com
Lab PM email: Terichang@eurofinsus.com
Phone/Fax: 714-895-5494
AG PM Email: Dacre.bush@anteagroup.com
Turn around time (days): 10
QC level Required: Standard
Special:
Mark one
MA MCP Cert?
CT RCP Cert?
Mark one
Lab Project ID (lab use)
Requested Analysis

Table with columns: ITEM #, SAMPLE ID, MATRIX CODE, SAMPLE TYPE, G-GRAB C-COMP, SAMPLE DATE, SAMPLE TIME, #OF CONTAINERS, FIELD FILTERED? (Y/N), Preservatives (Unpreserved, H2SO4, HNO3, HCl, NaOH, Na2SO3, Methanol, Other), and Comments/Lab Sample I.D.

Additional Comments/Special Instructions: Global ID: T0600101476
RELINQUISHED BY / AFFILIATION: [Signature] DATE: 12-2-16 TIME:
ACCEPTED BY / AFFILIATION: [Signature] DATE: 12/3/16 TIME: 1010
Sample Receipt Conditions: Y/N Y/N Y/N
Y/N Y/N Y/N
Y/N Y/N Y/N
Y/N Y/N Y/N
SHIPPING METHOD: (mark as appropriate) UPS COURIER FEDEX (GSO)
SAMPLER NAME AND SIGNATURE: WILLIAM WANK
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: [Signature] DATE Signed: 12-2-16 Time: 1:50
US MAIL
Temp in °C:
Samples on Ice?
Sample intact?
Trip Blank?

Final 11/13/06. AMTait

0293



800-322-5555 www.gso.com

Ship From
BLAINE TECH SERVICES, INC
MICHAEL NINOTAKA
1680 ROGERS AVE
SAN JOSE, CA 95112

Tracking #: 534210317

SDS



Ship To
CALSCIENCE
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

ORC
A
GARDEN GROVE

COD: \$0.00
Weight: 0 lb(s)
Reference:
BTSSJ

D92845A

Delivery Instructions:
FRAGILE, NON HAZARDOUS
Signature Type: REQUIRED



59827123

Print Date: 12/2/2016 5:08 PM

Print All

1 of 1

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.

Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer. Securely attach this label to your package, do not cover the barcode.

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SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: Antea

DATE: 12/03/2016

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)
 Thermometer ID: SC3A (CF: 0.0°C); Temperature (w/o CF): 2.8 °C (w/ CF): 2.8 °C; Blank Sample
 Sample(s) outside temperature criteria (PM/APM contacted by: _____)
 Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling
 Sample(s) received at ambient temperature; placed on ice for transport by courier
 Ambient Temperature: Air Filter Checked by: SN

CUSTODY SEAL:
 Cooler Present and Intact Present but Not Intact Not Present N/A Checked by: SN
 Sample(s) Present and Intact Present but Not Intact Not Present N/A Checked by: 1017

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sampling date <input checked="" type="checkbox"/> Sampling time <input type="checkbox"/> Matrix <input type="checkbox"/> Number of containers			
<input type="checkbox"/> No analysis requested <input type="checkbox"/> Not relinquished <input type="checkbox"/> No relinquished date <input checked="" type="checkbox"/> No relinquished time			
Sampler's name indicated on COC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and in good condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers for analyses requested	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sufficient volume/mass for analyses requested	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples-for certain analyses received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfide <input type="checkbox"/> Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation chemical(s) noted on COC and/or sample container	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unpreserved aqueous sample(s) received for certain analyses			
<input type="checkbox"/> Volatile Organics <input type="checkbox"/> Total Metals <input type="checkbox"/> Dissolved Metals			
Container(s) for certain analysis free of headspace	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Volatile Organics <input type="checkbox"/> Dissolved Gases (RSK-175) <input type="checkbox"/> Dissolved Oxygen (SM 4500)			
<input type="checkbox"/> Carbon Dioxide (SM 4500) <input type="checkbox"/> Ferrous Iron (SM 3500) <input type="checkbox"/> Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE: (Trip Blank Lot Number: _____)
 Aqueous: VOA VOAh VOAna₂ 100PJ 100PJna₂ 125AGB 125AGBh 125AGBp 125PB
 125PBz_{na} 250AGB 250CGB 250CGBs 250PB 250PBn 500AGB 500AGJ 500AGJs
 500PB 1AGB 1AGBna₂ 1AGBs 1PB 1PBna _____ _____ _____
 Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve (____) EnCores® (____) TerraCores® (____) _____
 Air: Tedlar™ Canister Sorbent Tube PUF _____ Other Matrix (____): _____ _____
 Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Resealable Bag
 Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = H₃PO₄, Labeled/Checked by: 1017
 s = H₂SO₄, u = ultra-pure, x = Na₂SO₃+NaHSO₄.H₂O, z_{na} = Zn (CH₃CO₂)₂ + NaOH Reviewed by: 778



Is the Data Valid?

(circle)

Yes / No

Preservation Temperature

(if Known): 2.8 °C

Antea Group Lab Validation Sheet

Project/Client: COP/ELT

Project #: 142705191

Date of Validation: 12/30/16 Date of Analysis: 12/9/16 Sample Date: 12/2/16

Completed By: Jon F. Signature: *Jonathan F. Williams*

Analytical Lab Used and Report # (if any): Eurofins Calscience 16-12-0293

Circle or
Highlight
Yes/No
below

1. Was the analysis the one requested?

Yes / No

2. Do the sample number(s) on the chain-of-custody (COC) match the one(s) that appear on the laboratory data sheet?

Yes / No

3. Were samples prepared (extracted, filtered, etc.) within EPA holding times?

Yes / No

4. Once prepared/extracted, were the samples analyzed within the EPA holding times?

Yes / No

5. Were Laboratory blanks performed, if so, were they below non-detect?

Yes / No

6. Are the units correct? (i.e., soil samples in mg/kg or ug/g, water samples mg/L, ug/L, and air samples in volume mg/m³, etc.)

Yes / No

7. Were appropriate Matrix Spike (MS) and Matrix Spike Duplicate (MSD) samples included in the laboratory batch sample?

Yes / No

8. In lieu of MS/ MSD, were surrogate spike (SS) or surrogate spike duplicate (SSD) samples included in the laboratory batch samples?

Yes / No N/A

9. Were MS/ MSD (or SS/SSD) within the acceptable range of % recovery (i.e., approx 80-120% depending on analyte)?

Yes / No

10. Were MS/MSD (or SS/SSD) values used to calculate Relative Percent Difference (RPD)?

Yes / No

11. Were Relative Percent Difference values within the acceptable range (i.e. ± 25%)?

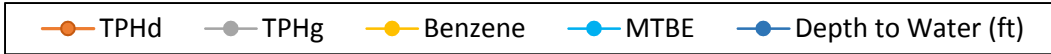
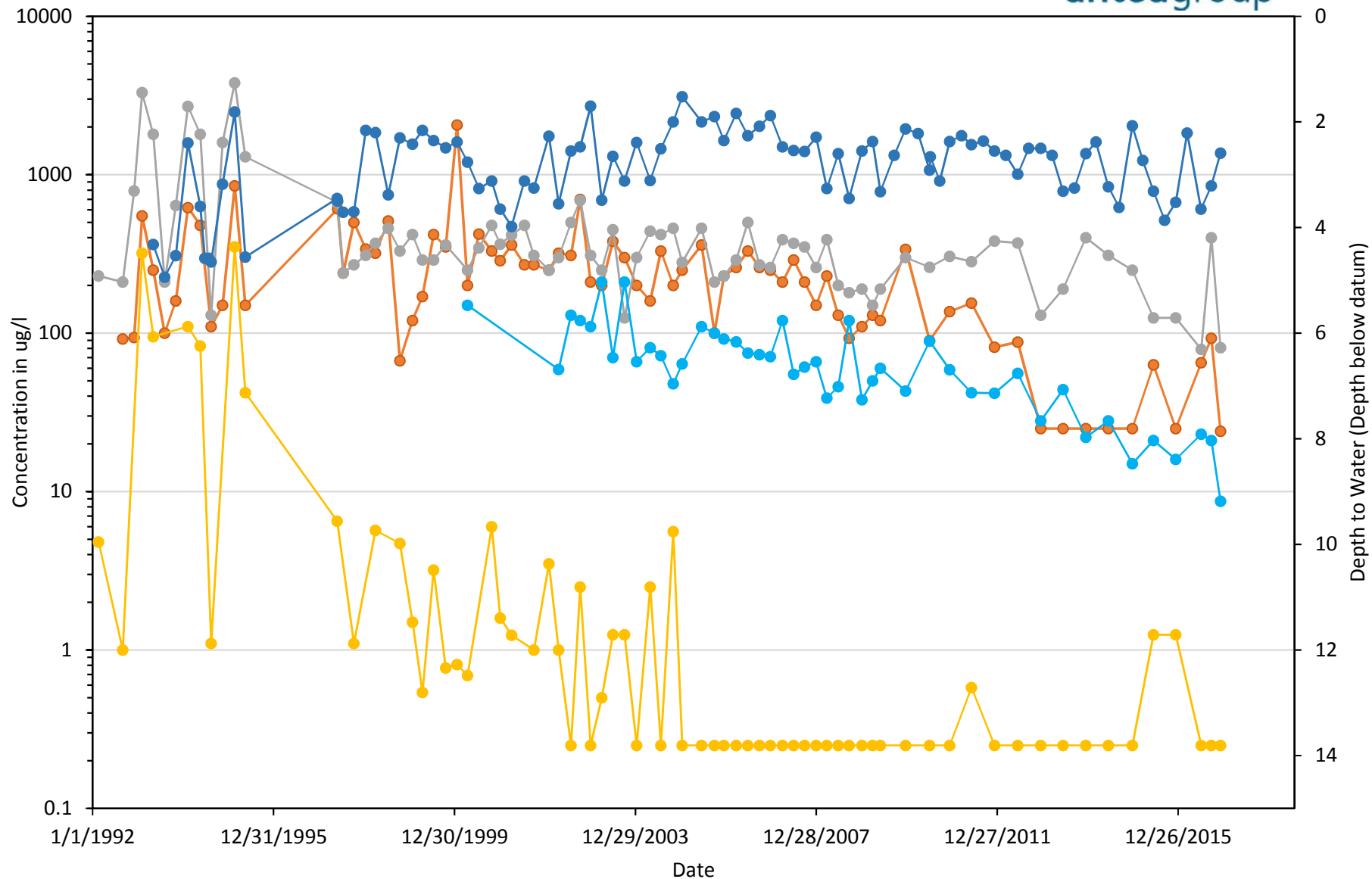
Yes / No

If any answer is no, explain why and what corrective action was taken:

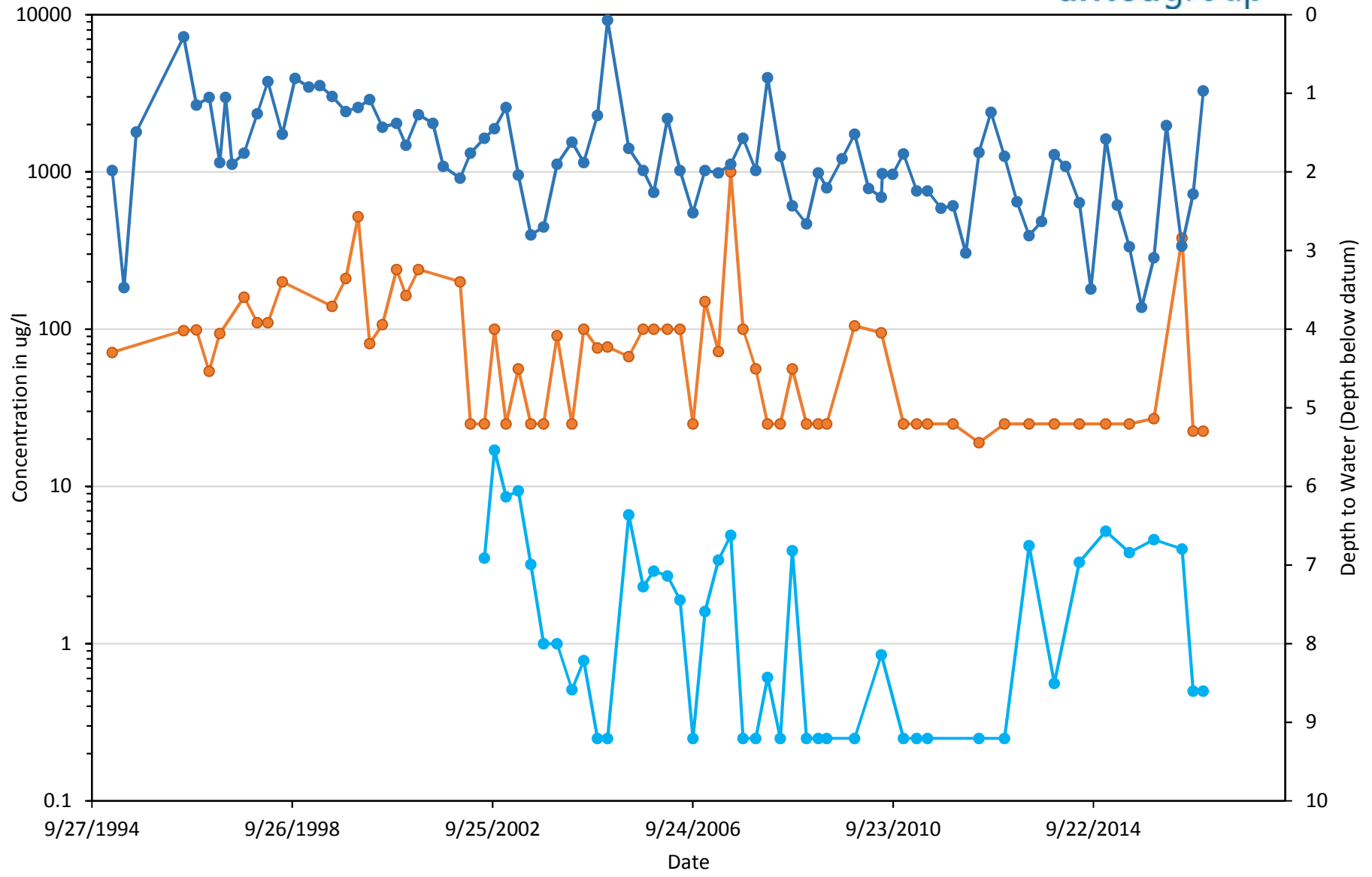
Appendix D

Time Series Graphs

MW-3
TPHd, TPHg, Benzene, & MTBE Concentrations
and Depth to Water Versus Time

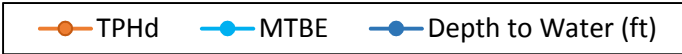
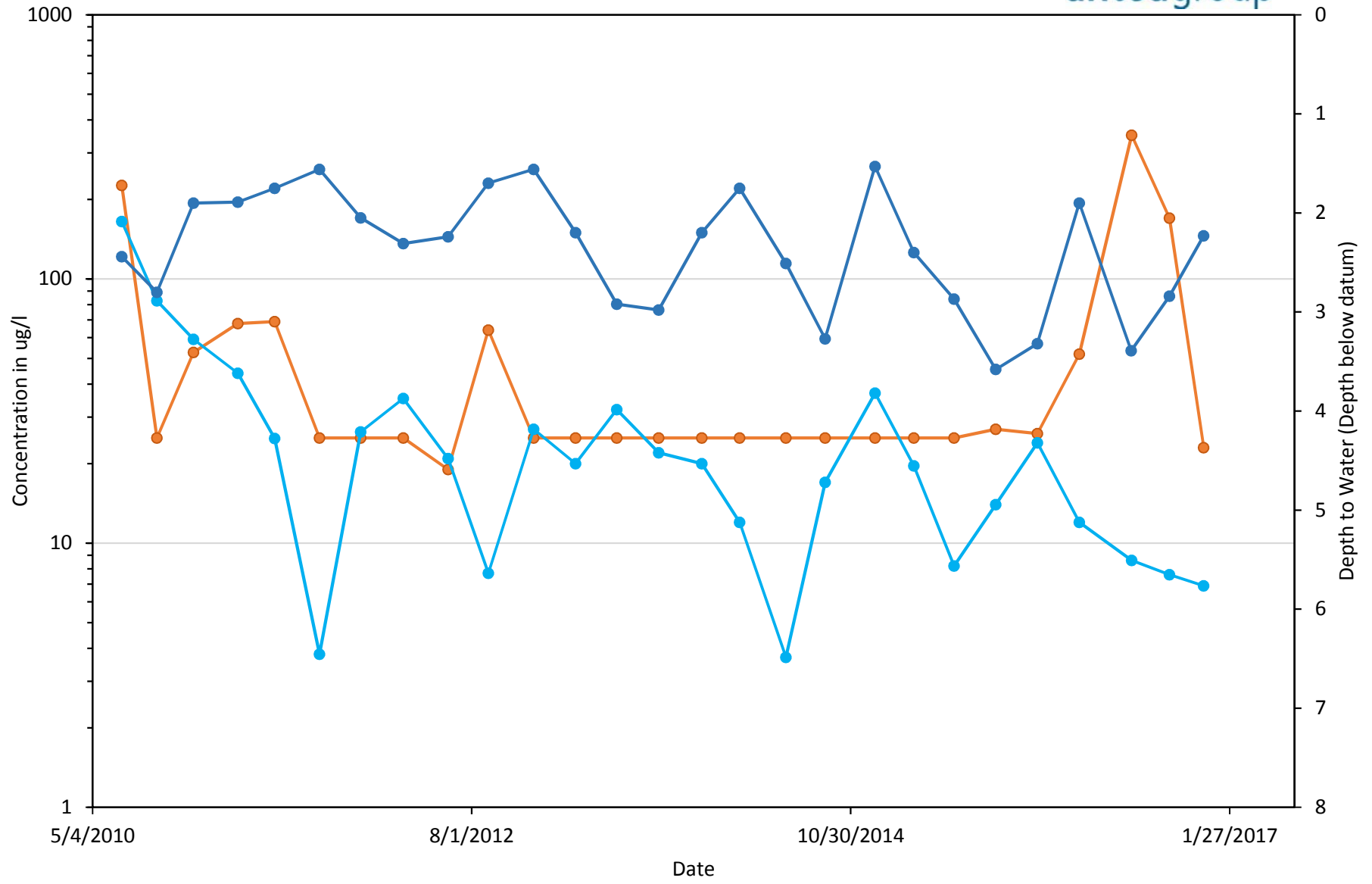


MW-9
TPHd & MTBE Concentrations
and Depth to Water Versus Time

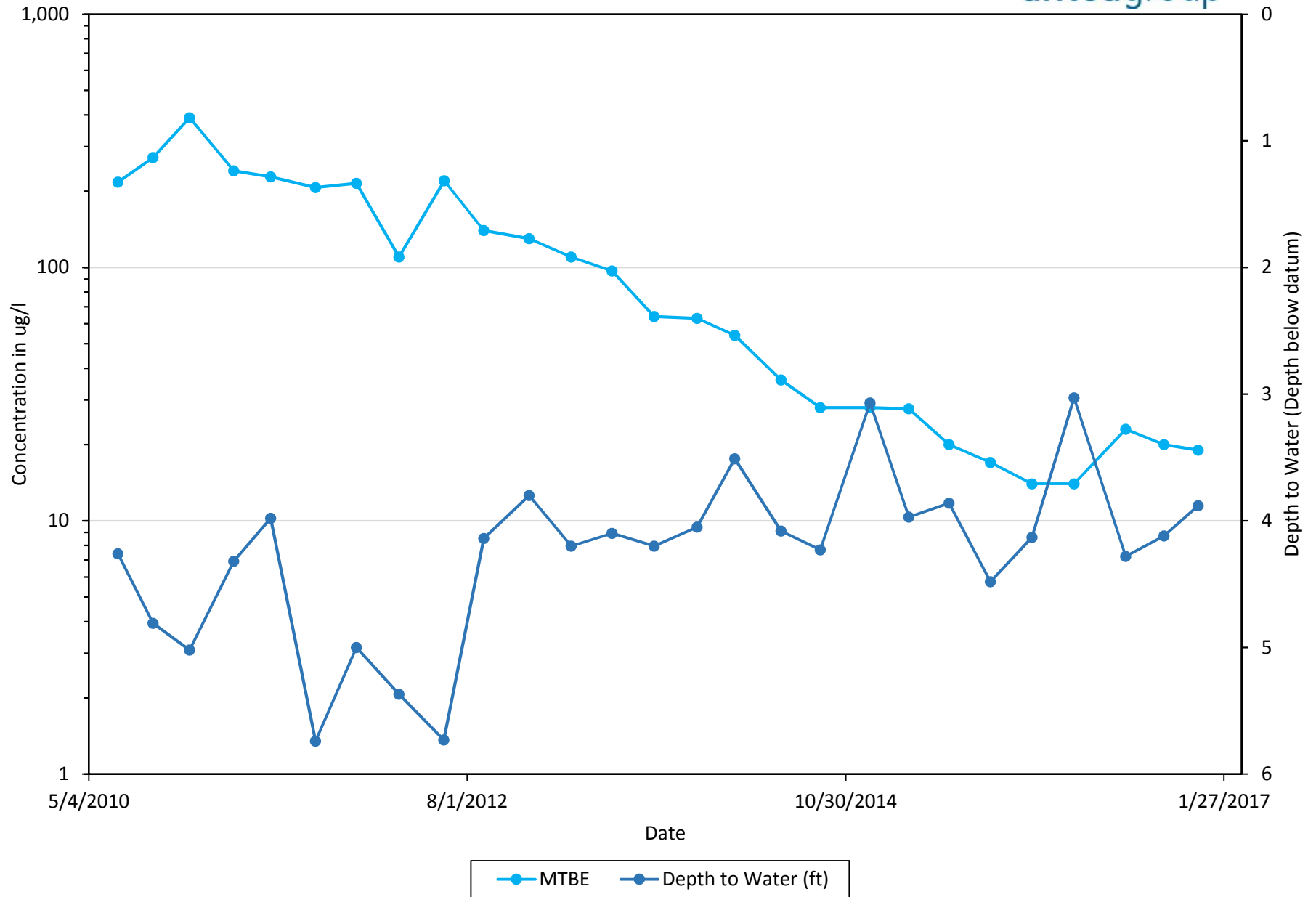


—●— TPHd —●— MTBE —●— Depth to Water (ft)

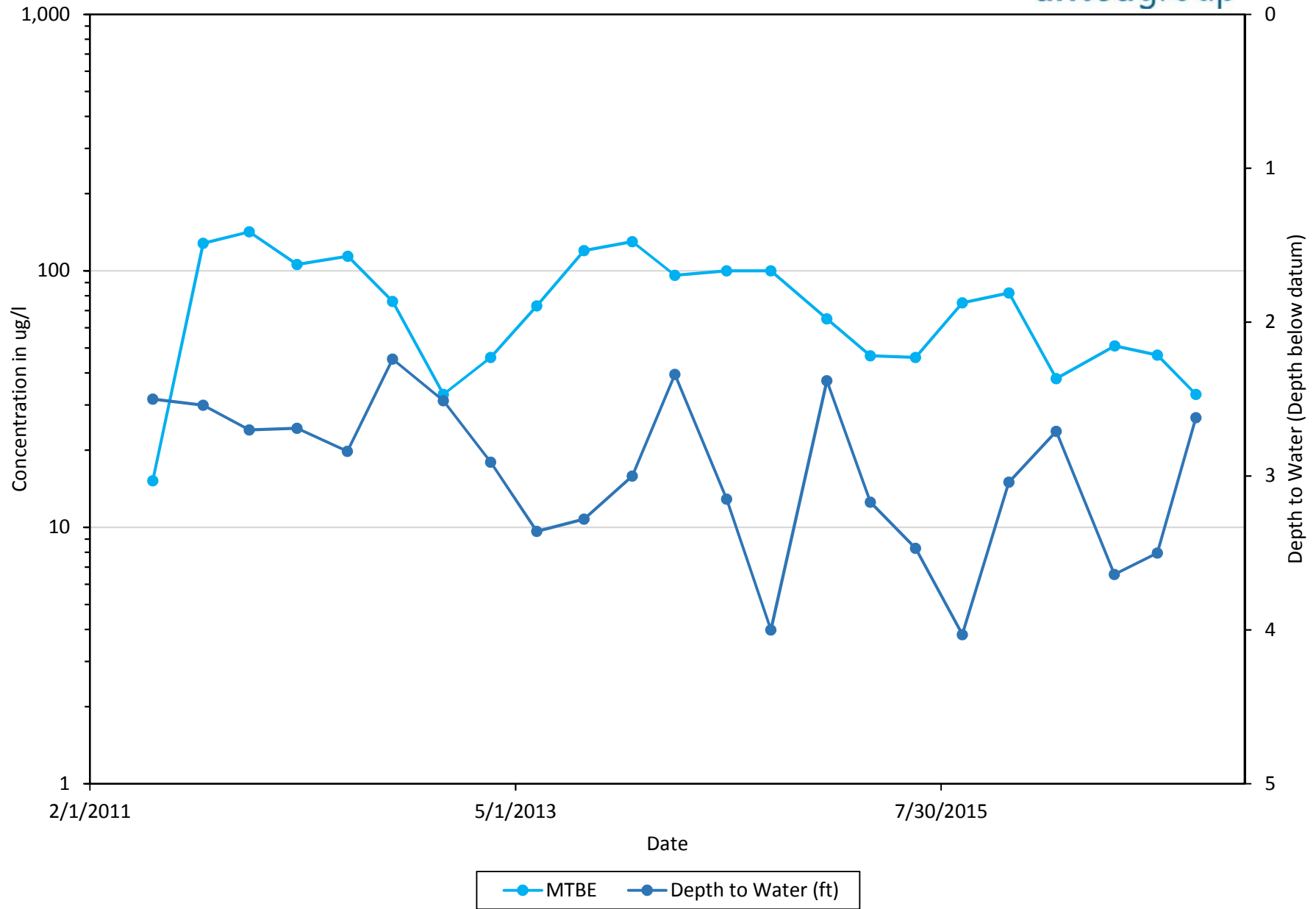
MW-11
MTBE Concentrations
and Depth to Water Versus Time



MW-13
MTBE Concentrations
and Depth to Water Versus Time



MW-15
MTBE Concentrations
and Depth to Water Versus Time



MW-16
MTBE & TPHd Concentrations
and Depth to Water Versus Time

