Remediation Management Services Company

4 Centerpointe Drive, Suite 200
La Palma, CA 90623
Room LPR 4-222
Office: (657) 529-4503
Mobile: (925) 890-5733
Charles. Carmel @bp.com

March 1, 2018

Washington Department of Ecology
Southwest Regional Office
Attn: Mr. Aaren Fielder
300 Desmond Drive SE
Lacey, WA 98503

Dear Mr. Fielder:

Please find the enclosed Semi-Annual Groundwater Monitoring Report – Second Half of 2017, that documents the results at ARCO Facility No. 5300 located at 710 15th Avenue, Longview, Washington.

Sincerely yours,

Chuck Carmel
Operations Project Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

cc: File, Antea Group

SEMI-ANNUAL GROUNDWATER MONITORING REPORT

Second Half of 2017

ARCO Facility No. 5300

710 15th Avenue, Longview, WA

Antea® Group Project No. 05300SA271
March 1, 2018

Prepared for:
Remediation Management Services Company
An affiliate of Atlantic Richfield Company
4 Centerpointe Drive, Suite 200
Room LPR-4-222
La Palma, CA 90623

Prepared by:
Antea Group
4006 148th Avenue NE
Redmond, WA 98052
800 477 7411

SEMI-ANNUAL GROUNDWATER MONITORING REPORT
Second Half of 2017
March 1, 2018

ARCO Facility No.: 5300

Address: 710 15th Avenue, Longview, WA

Atlantic Richfield Project Manager: Charles Carmel

Consulting Co./Contact Person: Antea Group / Megan Richard

Consultant Project Number: 05300SA271

Primary Agency/Regulatory FS ID No.: Washington State Department of Ecology / 41995646

WORK PERFORMED DURING SECOND HALF OF 2017:

· Antea®Group (Antea Group) conducted quarterly groundwater monitoring and sampling on September 29, and November 14, 2017.

· Antea Group prepared this Semi-Annual Groundwater Monitoring Report.

WORK SCHEDULED FOR FIRST HALF OF 2018:

· Antea Group will conduct quarterly groundwater monitoring and sampling.

· Antea Group will prepare a Semi-Annual Groundwater Monitoring Report.

Current Phase of Project:	**Monitoring**
Frequency of Groundwater Sampling and Monitoring:	**Quarterly**
Are LPH Present On-Site:	**No**
LPH Recovered this Reporting Period:	**None**
Cumulative LPH Recovered to Date:	**None**
Amount of Soil Removed to Date:	**9.91 tons (Dispenser Upgrades – Antea Group, December 2010)**
Current Remediation Techniques:	**Natural Attenuation**
Approximate Depth to Groundwater:	**11.41 to 12.50 ft. (9/29/2017);** **10.48 to 11.90 ft. (11/14/2017)**

Groundwater Gradient:	**Southwest (9/29/2017)** **Southwest (11/14/2017)**
	0.01 ft./linear ft. (9/29/2017) **0.01 ft./linear ft. (11/14/2017)**

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. 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.

Sincerely,

Joseph Glover
Staff Professional

Date: March 1, 2018

Reviewed by:

Megan Richard
Project Manager, LG

Date: March 1, 2018

cc: Mr. Aaren Fiedler, Washington Department of Ecology, Southwest Regional Office (Hardcopy)
Mr. Charles Carmel, Remediation Management Services Company (Electronic Copy - RMO Upload)
File, Antea Group

Enclosures

Tables

Table 1 Groundwater Gauging Data
Table 2 Groundwater Analytical Data

Figures

Figure 1 Site Location Map
Figure 2 Site Aerial Map
Figure 3 Groundwater Analytical and Elevation Contour Map – 9/29/2017
Figure 4 Groundwater Analytical and Elevation Contour Map – 11/14/2017

Appendix

Appendix A Analytical Lab Reports and Chain-of-Custody Documentation

Tables

Table 1 Groundwater Gauging Data
Table 2 Groundwater Analytical Data

TABLE 1
Groundwater Gauging Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-1	9/6/2012	99.90	11.57	NP	--	88.33	--
MW-1	12/14/2012	99.90	10.45	NP	--	89.45	--
MW-1	1/9/2013	99.90	10.42	NP	--	89.48	--
MW-1	5/29/2013	99.90	10.68	NP	--	89.22	--
MW-1	8/20/2013	99.90	11.45	NP	--	88.45	--
MW-1	11/13/2013	99.90	11.08	NP	--	88.82	--
MW-1	2/19/2014	99.90	10.54	NP	--	89.36	--
MW-1	4/23/2014	99.90	10.40	NP	--	89.50	--
MW-1	8/7/2014	99.90	11.28	NP	--	88.62	--
MW-1	11/19/2014	99.90	11.12	NP	--	88.78	--
MW-1	2/25/2015	99.90	10.72	NP	--	89.18	--
MW-1	8/11/2015	99.90	11.84	NP	--	88.06	--
MW-1	2/3/2016	99.90	10.10	NP	--	89.80	--
MW-1	4/8/2016	99.90	10.20	NP	--	89.70	--
MW-1	9/20/2016	99.90	11.88	NP	--	88.02	--
MW-1	12/28/2016	99.90	10.18	NP	--	89.72	--
MW-1	3/24/2017	99.90	9.65	NP	--	90.25	--
MW-1	6/22/2017	99.90	10.42	NP	--	89.48	--
MW-1	9/29/2017	99.90	11.48	NP	--	88.42	--
MW-1	11/14/2017	99.90	10.91	NP	--	88.99	--
MW-2	9/6/2012	99.72	11.43	NP	--	88.29	--
MW-2	12/14/2012	99.72	10.45	NP	--	89.27	--
MW-2	1/9/2013	99.72	10.38	NP	--	89.34	--
MW-2	5/29/2013	99.72	10.66	NP	--	89.06	--
MW-2	8/20/2013	99.72	11.35	NP	--	88.37	--
MW-2	11/13/2013	99.72	11.02	NP	--	88.70	--
MW-2	2/19/2014	99.72	10.49	NP	--	89.23	--
MW-2	4/23/2014	99.72	10.38	NP	--	89.34	--
MW-2	8/7/2014	99.72	11.22	NP	--	88.50	--
MW-2	11/19/2014	99.72	11.03	NP	--	88.69	--
MW-2	2/25/2015	99.72	10.72	NP	--	89.00	--
MW-2	8/11/2015	99.72	11.74	NP	--	87.98	--
MW-2	2/3/2016	99.72	9.88	NP	--	89.84	--
MW-2	4/8/2016	99.72	10.13	NP	--	89.59	--

TABLE 1
Groundwater Gauging Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-2	9/20/2016	99.72	11.80	NP	--	87.92	--
MW-2	12/28/2016	99.72	10.11	NP	--	89.61	--
MW-2	3/24/2017	99.72	9.55	NP	--	90.17	--
MW-2	6/22/2017	99.72	10.35	NP	--	89.37	--
MW-2	9/29/2017	99.72	11.41	NP	--	88.31	--
MW-2	11/14/2017	99.72	10.48	NP	--	89.24	--
MW-3	9/6/2012	99.68	11.63	NP	--	88.05	--
MW-3	12/14/2012	99.68	10.51	NP	--	89.17	--
MW-3	1/9/2013	99.68	10.45	NP	--	89.23	--
MW-3	5/29/2013	99.68	10.81	NP	--	88.87	--
MW-3	8/20/2013	99.68	11.55	NP	--	88.13	--
MW-3	11/13/2013	99.68	11.10	NP	--	88.58	--
MW-3	2/19/2014	99.68	10.01	NP	--	89.67	--
MW-3	4/23/2014	99.68	10.47	NP	--	89.21	--
MW-3	8/7/2014	99.68	11.36	NP	--	88.32	--
MW-3	11/19/2014	99.68	11.10	NP	--	88.58	--
MW-3	2/25/2015	99.68	10.92	NP	--	88.76	--
MW-3	8/11/2015	99.68	11.94	NP	--	87.74	--
MW-3	2/3/2016	99.68	10.25	NP	--	89.43	--
MW-3	4/8/2016	99.68	10.44	NP	--	89.24	--
MW-3	9/20/2016	99.68	11.82	NP	--	87.86	--
MW-3	12/28/2016	99.68	10.20	NP	--	89.48	--
MW-3	3/24/2017	99.68	9.63	NP	--	90.05	--
MW-3	6/22/2017	99.68	10.85	NP	--	88.83	--
MW-3	9/29/2017	99.68	11.64	NP	--	88.04	--
MW-3	11/14/2017	99.68	10.81	NP	--	88.87	--
MW-4	9/6/2012	100.00	12.02	NP	--	87.98	--
MW-4	12/14/2012	100.00	11.03	NP	--	88.97	--
MW-4	1/9/2013	100.00	10.90	NP	--	89.10	--
MW-4	5/29/2013	100.00	11.28	NP	--	88.72	--
MW-4	8/20/2013	100.00	11.95	NP	--	88.05	--
MW-4	11/13/2013	100.00	11.69	NP	--	88.31	--
MW-4	2/19/2014	100.00	10.73	NP	--	89.27	--

TABLE 1
Groundwater Gauging Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-4	4/23/2014	100.00	11.14	NP	--	88.86	--
MW-4	8/7/2014	100.00	11.88	NP	--	88.12	--
MW-4	11/19/2014	100.00	11.71	NP	--	88.29	--
MW-4	2/25/2015	100.00	11.43	NP	--	88.57	--
MW-4	8/11/2015	100.00	12.25	NP	--	87.75	--
MW-4	2/3/2016	100.00	10.65	NP	--	89.35	--
MW-4	4/8/2016	100.00	10.78	NP	--	89.22	--
MW-4	9/20/2016	100.00	12.40	NP	--	87.60	--
MW-4	12/28/2016	100.00	10.70	NP	--	89.30	--
MW-4	3/24/2017	100.00	10.11	NP	--	89.89	--
MW-4	6/22/2017	100.00	11.11	NP	--	88.89	--
MW-4	9/29/2017	100.00	12.01	NP	--	87.99	--
MW-4	11/14/2017	100.00	11.48	NP	--	88.52	--
MW-5	4/8/2016	--	11.13	NP	--	--	--
MW-5	9/20/2016	--	12.40	NP	--	--	--
MW-5	12/28/2016	--	11.24	NP	--	--	--
MW-5	3/24/2017	--	10.70	NP	--	--	--
MW-5	6/22/2017	--	11.41	NP	--	--	--
MW-5	9/29/2017	--	12.07	NP	--	--	--
MW-5	11/14/2017	--	11.69	NP	--	--	--
MW-6	8/20/2013	99.76	11.63	NP	--	88.13	--
MW-6	11/13/2013	99.76	11.43	NP	--	88.33	--
MW-6	2/19/2014	99.76	10.51	NP	--	89.25	--
MW-6	4/23/2014	99.76	10.68	NP	--	89.08	--
MW-6	8/7/2014	99.76	11.60	NP	--	88.16	--
MW-6	11/19/2014	99.73	11.35	NP	--	88.38	--
MW-6	2/25/2015	99.73	11.04	NP	--	88.69	--
MW-6	8/11/2015	99.73	12.00	NP	--	87.73	--
MW-6	2/3/2016	99.73	10.13	NP	--	89.60	--
MW-6	4/8/2016	99.73	10.40	NP	--	89.33	--
MW-6	9/20/2016	99.73	12.11	NP	--	87.62	--
MW-6	12/28/2016	99.73	10.43	NP	--	89.30	--
MW-6	3/24/2017	99.73	9.76	NP	--	89.97	--

TABLE 1
Groundwater Gauging Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-6	6/22/2017	99.73	10.78	NP	--	88.95	--
MW-6	9/29/2017	99.73	11.70	NP	--	88.03	--
MW-6	11/14/2017	99.73	11.16	NP	--	88.57	--
MW-7	8/20/2013	100.27	12.40	NP	--	87.87	--
MW-7	11/13/2013	100.27	12.09	NP	--	88.18	--
MW-7	2/19/2014	100.27	10.91	NP	--	89.36	--
MW-7	4/23/2014	100.27	11.52	NP	--	88.75	--
MW-7	8/7/2014	100.27	12.35	NP	--	87.92	--
MW-7	11/19/2014	100.27	12.09	NP	--	88.18	--
MW-7	2/25/2015	100.27	11.83	NP	--	88.44	--
MW-7	8/11/2015	100.27	12.75	NP	--	87.52	--
MW-7	2/3/2016	100.27	11.00	NP	--	89.27	--
MW-7	4/8/2016	100.27	11.40	NP	--	88.87	--
MW-7	9/20/2016	100.27	12.73	NP	--	87.54	--
MW-7	12/28/2016	100.27	11.18	NP	--	89.09	--
MW-7	3/24/2017	100.27	10.70	NP	--	89.57	--
MW-7	6/22/2017	100.27	11.67	NP	--	88.60	--
MW-7	9/29/2017	100.27	12.50	NP	--	87.77	--
MW-7	11/14/2017	100.27	11.90	NP	--	88.37	--
MW-8	8/20/2013	100.00	12.04	NP	--	87.96	--
MW-8	11/13/2013	100.00	12.73	NP	--	87.27	--
MW-8	2/19/2014	100.00	10.29	NP	--	89.71	--
MW-8	4/23/2014	100.00	11.14	NP	--	88.86	--
MW-8	8/7/2014	100.00	11.94	NP	--	88.06	--
MW-8	11/19/2014	100.00	11.70	NP	--	88.30	--
MW-8	2/25/2015	100.00	11.50	NP	--	88.50	--
MW-8	8/11/2015	100.00	12.42	NP	--	87.58	--
MW-8	2/3/2016	100.00	10.65	NP	--	89.35	--
MW-8	4/8/2016	100.00	11.04	NP	--	88.96	--
MW-8	9/20/2016	100.00	12.37	NP	--	87.63	--
MW-8	12/28/2016	100.00	10.76	NP	--	89.24	--
MW-8	3/24/2017	100.00	10.26	NP	--	89.74	--
MW-8	6/22/2017	100.00	11.30	NP	--	88.70	--

TABLE 1
Groundwater Gauging Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-8	9/29/2017	100.00	12.15	NP	--	87.85	--
MW-8	11/14/2017	100.00	11.41	NP	--	88.59	--

Notes:
TOC - Top of Casing
ft - feet
NP - No Product
LNAPL - Light Non-Aqueous Phase Liquid
* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)
-- No Information Available

Table 2
Groundwater Analytical Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

CONSTITUENT		B	T	E	X	MTBE	EDB	EDC	TPH-G	Lead (Total)	Lead (Dissolved)
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		**5**	**1000**	**700**	**1000**	**20**	**0.01**	**5**	**1000/800[1]**	**15**	**NE**
Well ID	Date										
MW-1	9/6/2012	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50.0	**50.6**	--
MW-1	12/14/2012	< 1.0	< 1.0	< 1.0	< 3.0	--	< 0.01	< 1.0	< 100	< 3.0	--
MW-1	1/9/2013	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 1.0	< 1.0	< 80	11	--
MW-1	5/29/2013	< 0.50	< 0.50	< 0.50	< 1.00	< 0.50	< 0.0096	< 0.50	< 50	< 10	--
MW-1	8/20/2013	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.0096	< 0.50	< 50	< 10	< 10
MW-1	11/13/2013	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-1	2/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-1	4/23/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-1	8/7/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	8.1	< 2.0
MW-1	11/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-1	2/25/2015	< 2.0*	< 2.0*	< 3.0*	< 3.0	< 1.0	--	--	< 100	< 2.0	< 2.0
MW-1	8/11/2015	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	190	< 2.0	< 2.0
MW-1	2/3/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0*	--	--	< 50*	< 2.0	< 2.0
MW-1	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-1	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-1	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-1	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 4.0	< 4.0
MW-1	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 2.0	--	--	< 500	< 4.0	< 4.0
MW-1	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 100	< 10.0	< 10.0
MW-1	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	< 1.0 H1 L1 SS	--	--	< 100	< 10.0	< 10.0
MW-2	9/6/2012	< 1.0	< 1.0	< 1.0	< 3.0	2.6	< 0.010	< 1.0	< 50.0	**15.8**	--
MW-2	12/14/2012	< 1.0	< 1.0	< 1.0	< 3.0	--	< 0.01	< 1.0	< 100	< 3.0	--
MW-2	1/9/2013	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 1.0	< 1.0	< 80	< 1.0	--
MW-2	5/29/2013	< 0.50	< 0.50	< 0.50	< 1.00	0.66	< 0.0098	< 0.50	< 50	13.0	--
MW-2	8/20/2013	< 0.50	< 0.50	< 0.50	< 1.0	0.70	< 0.0097	< 0.50	< 50	< 10	< 10
MW-2	11/13/2013	< 1.0	2.8	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	7.8	< 2.0
MW-2	2/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-2	4/23/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-2	8/7/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-2	11/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-2	2/25/2015	< 2.0*	< 2.0*	< 3.0*	< 3.0	< 1.0	--	--	< 100	< 2.0	< 2.0
MW-2	8/11/2015	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	65	< 2.0	< 2.0
MW-2	2/3/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0*	--	--	< 50*	< 2.0	< 2.0
MW-2	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-2	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-2	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-2	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 4.0	< 4.0
MW-2	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 2.0	--	--	< 500	< 4.0	< 4.0
MW-2	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 100	< 10.0	< 10.0
MW-2	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	< 1.0 H1 L1	--	--	< 100	< 10.0	< 10.0

Table 2
Groundwater Analytical Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

CONSTITUENT		B	T	E	X	MTBE	EDB	EDC	TPH-G	Lead (Total)	Lead (Dissolved)
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		**5**	**1000**	**700**	**1000**	**20**	**0.01**	**5**	**1000/800[1]**	**15**	**NE**
MW-3	9/6/2012	< 1.0	< 1.0	< 1.0	< 3.0	16.9	< 0.010	< 1.0	< 50.0	< 10.0	--
MW-3	12/14/2012	< 1.0	< 1.0	< 1.0	< 3.0	--	< 0.01	< 1.0	< 100	11.1	--
MW-3	1/9/2013	< 1.0	< 1.0	< 1.0	< 3.0	17	< 1.0	< 1.0	< 80	< 1.0	--
MW-3	5/29/2013	< 0.50	< 0.50	< 0.50	< 1.00	14	< 0.0097	< 0.50	< 50	10.7	--
MW-3	8/20/2013	< 0.50	< 0.50	< 0.50	< 1.0	7.9	< 0.0097	< 0.50	< 50	< 10	< 10
MW-3	11/13/2013	< 1.0	2.3	< 1.0	< 3.0	17	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-3	2/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	11	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-3	4/23/2014	< 1.0	< 1.0	< 1.0	< 3.0	14	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-3	8/7/2014	< 1.0	< 1.0	< 1.0	< 3.0	**25**	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-3	11/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	11	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-3	2/25/2015	< 2.0*	< 2.0*	< 3.0*	< 3.0	8.1	--	--	< 100	< 2.0	< 2.0
MW-3	8/11/2015	< 2.0	< 2.0	< 3.0	< 3.0	3.8	--	--	54	< 2.0	< 2.0
MW-3	2/3/2016	< 2.0	< 2.0	< 3.0	< 3.0	4.8 H	--	--	< 50*	< 2.0	< 2.0
MW-3	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	7.9	--	--	< 50	< 2.0	< 2.0
MW-3	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	8.6	--	--	< 50	< 2.0	< 2.0
MW-3	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	13	--	--	< 50	< 2.0	< 2.0
MW-3	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	4.8	--	--	< 50	< 4.0	< 4.0
MW-3	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	9.2	--	--	< 500	< 4.0	< 4.0
MW-3	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	10.3	--	--	< 100	< 10.0	< 10.0
MW-3	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	5.4 H1 L1 SS	--	--	< 100	< 10.0	< 10.0
MW-4	9/6/2012	**6.1**	< 1.0	290	116	3.6	< 0.010	< 1.0	**10200**	< 10.0	--
MW-4	12/14/2012	4.8	< 1.0	208	50.7	--	< 0.01	< 1.0	**3230**	**15.8**	--
MW-4	1/9/2013	< 5.0	< 5.0	250	56	< 5.0	< 5.0	< 5.0	**4500**	6.1	--
MW-4	5/29/2013	2.1	< 0.50	220	48.8	2.6	< 0.0095	< 0.50	**4500**	14.7	--
MW-4	8/20/2013	1.6	< 0.50	240	47	< 2.4	< 0.0098	< 0.50	**4500**	< 10	< 10
MW-4	11/13/2013	1.7	1.9	270	43	1.1	< 0.010	< 1.0	**7100**	8.9	8.2
MW-4	2/19/2014	1.1	< 1.0	180	26	2.0	< 0.010	< 1.0	**5400**	5.6	5.7
MW-4	4/23/2014	< 1.0	< 1.0	130	17	< 1.0	< 0.010	< 1.0	**5800**	8.6	6.1
MW-4	8/7/2014	< 1.0	< 1.0	170	15	< 1.0	< 0.010	< 1.0	**5700**	6.6	6.0
MW-4	11/19/2014	< 1.0	< 1.0	< 1.0	7.6	< 1.0	< 0.010	< 1.0	**4900**	9.0	6.9
MW-4	2/25/2015	< 2.0*	< 2.0*	130	5.5	< 1.0	--	--	< 100	6.1	5.3
MW-4	8/11/2015	< 2.0	< 2.0	46	< 3.0	< 1.0	--	--	**3700**	5.7	5.6
MW-4	2/3/2016	< 2.0	< 2.0	53	< 3.0	< 1.0*	--	--	**3300 ***	5.8	5.5
MW-4	4/8/2016	< 2.0	< 2.0	54	< 3.0	< 1.0	--	--	**1900**	5.8	5.3
MW-4	9/20/2016	< 2.0	< 2.0	15	< 3.0	< 1.0	--	--	**2200**	5.4	4.3
MW-4	12/28/2016	< 2.0	< 2.0	39	< 3.0	< 1.0	--	--	**2300**	5.9	5.1
MW-4	3/24/2017	< 2.0	< 2.0	24	< 3.0	< 1.0	--	--	**1800**	4.8	4.8
MW-4	6/22/2017	< 2.0	< 2.0	22	< 3.0	< 2.0	--	--	**1700**	5.3	4.9
MW-4	9/29/2017	< 1.0	< 1.0	23.5	< 3.0	< 1.0	--	--	**2260**	< 10.0	< 10.0
MW-4	11/14/2017	< 1.0 H1	< 1.0 H1	24.3 H1	< 3.0	< 1.0 H1 L1	--	--	**2300**	< 10.0	< 10.0

Table 2
Groundwater Analytical Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

CONSTITUENT		B	T	E	X	MTBE	EDB	EDC	TPH-G	Lead (Total)	Lead (Dissolved)
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		**5**	**1000**	**700**	**1000**	**20**	**0.01**	**5**	**1000/800[1]**	**15**	**NE**
MW-5	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	270	< 2.0	< 2.0
MW-5	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	270	< 2.0	< 2.0
MW-5	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	480	< 2.0	< 2.0
MW-5	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	300	< 4.0	< 4.0
MW-5	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 2.0	--	--	670	< 4.0	< 4.0
MW-5	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	483	< 10.0	< 10.0
MW-5	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	< 1.0 H1 L1	--	--	418	< 10.0	< 10.0
MW-6	8/20/2013	< 0.50	< 0.50	1.9	< 1.0	4.9	< 0.0097	< 0.50	650	< 10	< 10
MW-6	11/13/2013	< 1.0	1.4	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	400	2.1	< 2.0
MW-6	2/19/2014	< 1.0	< 1.0	1.4	< 3.0	1.6	< 0.010	< 1.0	300	< 2.0	< 2.0
MW-6	4/23/2014	< 1.0	< 1.0	1.0	< 3.0	< 1.0	< 0.010	< 1.0	**830**	3.4	< 2.0
MW-6	8/7/2014	< 1.0	< 1.0	3.0	< 3.0	< 1.0	< 0.010	< 1.0	570	< 2.0	< 2.0
MW-6	11/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	220	< 2.0	< 2.0
MW-6	2/25/2015	< 2.0*	< 2.0*	< 3.0*	< 3.0	< 1.0	--	--	370	< 2.0	< 2.0
MW-6	8/11/2015	< 2.0	< 2.0	< 3.0	< 3.0	2.2	--	--	88	< 2.0	< 2.0
MW-6	2/3/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0H	--	--	140 *	< 2.0	< 2.0
MW-6	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	230	< 2.0	< 2.0
MW-6	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	1.3	--	--	84	< 2.0	< 2.0
MW-6	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	97	< 2.0	< 2.0
MW-6	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	80	< 4.0	< 4.0
MW-6	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 2.0	--	--	< 500	< 4.0	< 4.0
MW-6	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	2.3	--	--	149	< 10.0	< 10.0
MW-6	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	1.1 H1 L1 SS	--	--	190	< 10.0	< 10.0
MW-7	8/20/2013	< 0.50	< 0.50	< 0.50	< 1.0	2.0	< 0.0096	< 0.50	< 50	< 10	< 10
MW-7	11/13/2013	< 1.0	1.2	< 1.0	< 3.0	2.2	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-7	2/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-7	4/23/2014	< 1.0	< 1.0	< 1.0	< 3.0	2.2	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-7	8/7/2014	< 1.0	< 1.0	< 1.0	< 3.0	2.9	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-7	11/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	3.2	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-7	2/25/2015	< 2.0*	< 2.0*	< 3.0*	< 3.0	1.8	--	--	< 100	< 2.0	< 2.0
MW-7	8/11/2015	< 2.0	< 2.0	< 3.0	< 3.0	2.8	--	--	< 50	< 2.0	< 2.0
MW-7	2/3/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0*	--	--	< 50*	< 2.0	< 2.0
MW-7	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	1.8	--	--	< 50	< 2.0	< 2.0
MW-7	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	3.0	--	--	< 50	< 2.0	< 2.0
MW-7	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 2.0	< 2.0
MW-7	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 1.0	--	--	< 50	< 4.0	< 4.0
MW-7	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 2.0	--	--	< 500	< 4.0	< 4.0
MW-7	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	3.9	--	--	< 100	< 10.0	< 10.0
MW-7	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	2.6 H1 L1 SS	--	--	< 100	< 10.0	< 10.0

Table 2
Groundwater Analytical Data
ARCO Facility 5300
710 15th Avenue
Longview, WA

CONSTITUENT		B	T	E	X	MTBE	EDB	EDC	TPH-G	Lead (Total)	Lead (Dissolved)
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		**5**	**1000**	**700**	**1000**	**20**	**0.01**	**5**	**1000/800[1]**	**15**	**NE**
MW-8	8/20/2013	< 0.50	< 0.50	< 0.50	< 1.0	2.2	< 0.0097	< 0.50	< 50	< 10	< 10
MW-8	11/13/2013	< 1.0	1.0	< 1.0	< 3.0	2.3	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-8	2/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-8	4/23/2014	< 1.0	< 1.0	< 1.0	< 3.0	1.9	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-8	8/7/2014	< 1.0	< 1.0	< 1.0	< 3.0	1.8	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-8	11/19/2014	< 1.0	< 1.0	< 1.0	< 3.0	2.7	< 0.010	< 1.0	< 50	< 2.0	< 2.0
MW-8	2/25/2015	< 2.0*	< 2.0*	< 3.0*	< 3.0	3.0	--	--	< 100	< 2.0	< 2.0
MW-8	8/11/2015	< 2.0	< 2.0	< 3.0	< 3.0	4.6	--	--	200	< 2.0	< 2.0
MW-8	2/3/2016	< 2.0	< 2.0	< 3.0	< 3.0	9.5 *	--	--	< 50*	< 2.0	< 2.0
MW-8	4/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	4.5	--	--	< 50	< 2.0	< 2.0
MW-8	9/20/2016	< 2.0	< 2.0	< 3.0	< 3.0	8.6	--	--	< 50	< 2.0	< 2.0
MW-8	12/28/2016	< 2.0	< 2.0	< 3.0	< 3.0	1.2	--	--	< 50	< 2.0	< 2.0
MW-8	3/24/2017	< 2.0	< 2.0	< 3.0	< 3.0	4.2	--	--	< 50	< 4.0	< 4.0
MW-8	6/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	6.3	--	--	< 500	< 4.0	< 4.0
MW-8	9/29/2017	< 1.0	< 1.0	< 1.0	< 3.0	8.2	--	--	< 100	< 10.0	< 10.0
MW-8	11/14/2017	< 1.0 H1	< 1.0 H1	< 1.0 H1	< 3.0	6.6 H1 L1 SS	--	--	< 100	< 10.0	< 10.0

Notes:

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes, Total

MTBE = Methyl-tertiary-butyl ether

EDB = 1,2-Dibromo-ethane

EDC = 1,2-Dichloro-ethane

TPH-G = Total petroleum hydrocarbons as gasoline by Northwest Method NWTPH-Gx

TPH-D = Total petroleum hydrocarbons as diesel by Northwest Method NWTPH-Dx

TPH-O = Total petroleum hydrocarbons as oil by Northwest Method NWTPH-Dx

1,000/800[1] ug/L if no detectable levels of Benzene in the sample - otherwise 800 ug/L

NE = Not evaluated

<1.0 = Concentrations were not detected above the laboratory method reporting limit.

ug/L = Micrograms per liter (ppb)

ND = Not detected

-- = No value given/Not analyzed/Not applicable

MTCA = Model Toxics Control Act

Results in **bold** indicate concentrations in excess of MTCA Method A Cleanup Levels

* = LCS or LCSD is outside acceptance limits

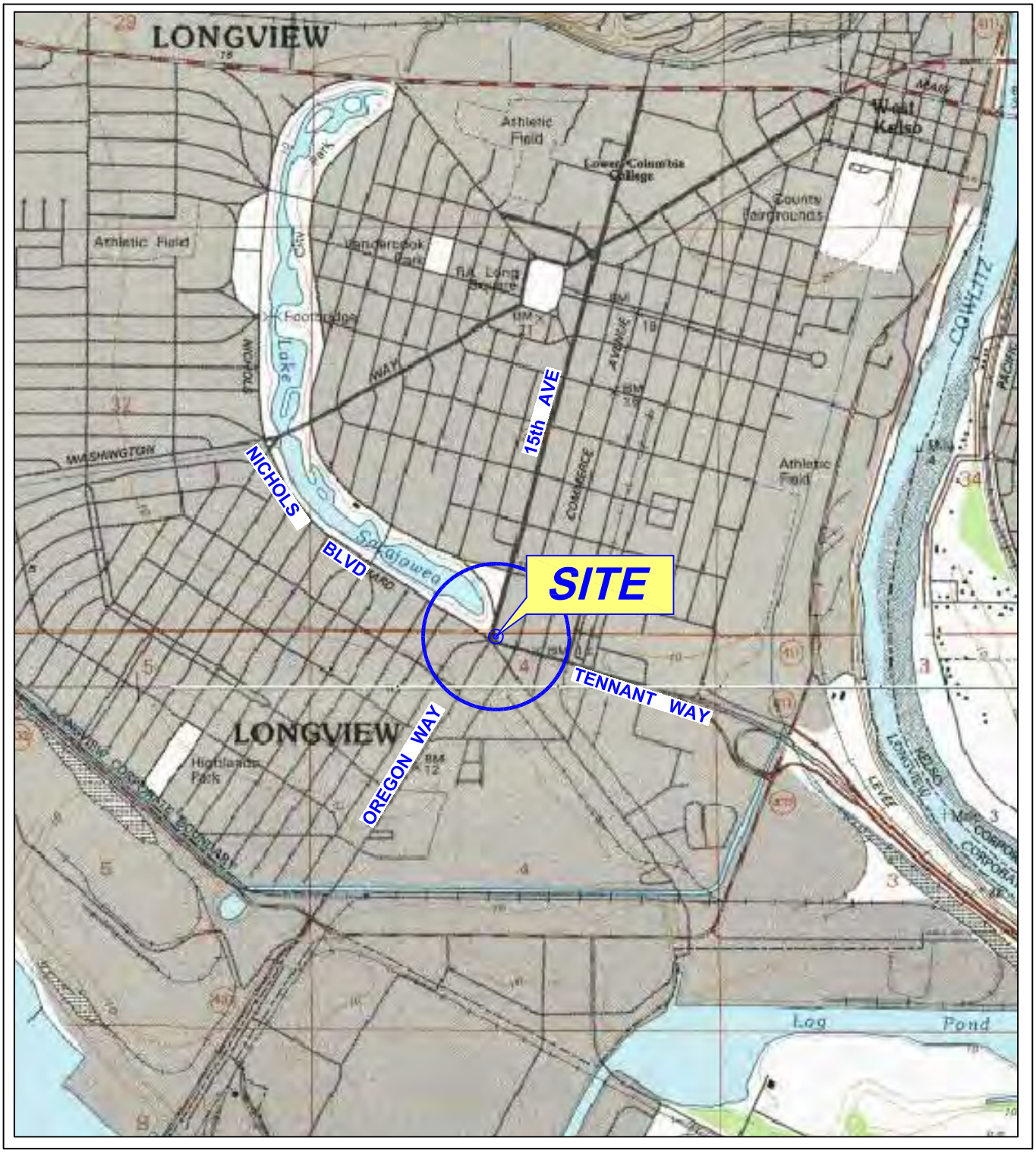
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

H1 = Analysis conducted outside the recognized method holding time.

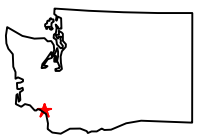
SS = This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

Figures

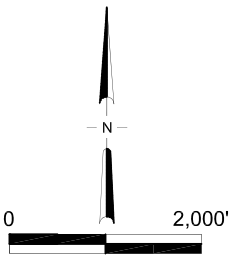
Figure 1 Site Location Map
Figure 2 Site Aerial Map
Figure 3 Groundwater Analytical and Elevation Contour Map – 9/29/2017
Figure 4 Groundwater Analytical and Elevation Contour Map – 11/14/2017



GENERAL NOTES:
BASE MAP FROM TERRAIN NAVIGATOR PRO
KELSO, WA. QUADRANGLE
7.5 MINUTE TOPOGRAPHIC MAP
1990



QUADRANGLE LOCATION



SCALE

FIGURE 1
SITE LOCATION MAP

ARCO FACILITY NO. 5300
710 15th AVENUE
LONGVIEW, WA.

PROJECT NO. 05300EA131		DRAWN BY K. MARTIN	
FILE NO. 5300-SLM		PREPARED BY M. STOCK	
DATE 04 JUN 13	REV. 0	REVIEWED BY	

antea group

NORTH

0 200'

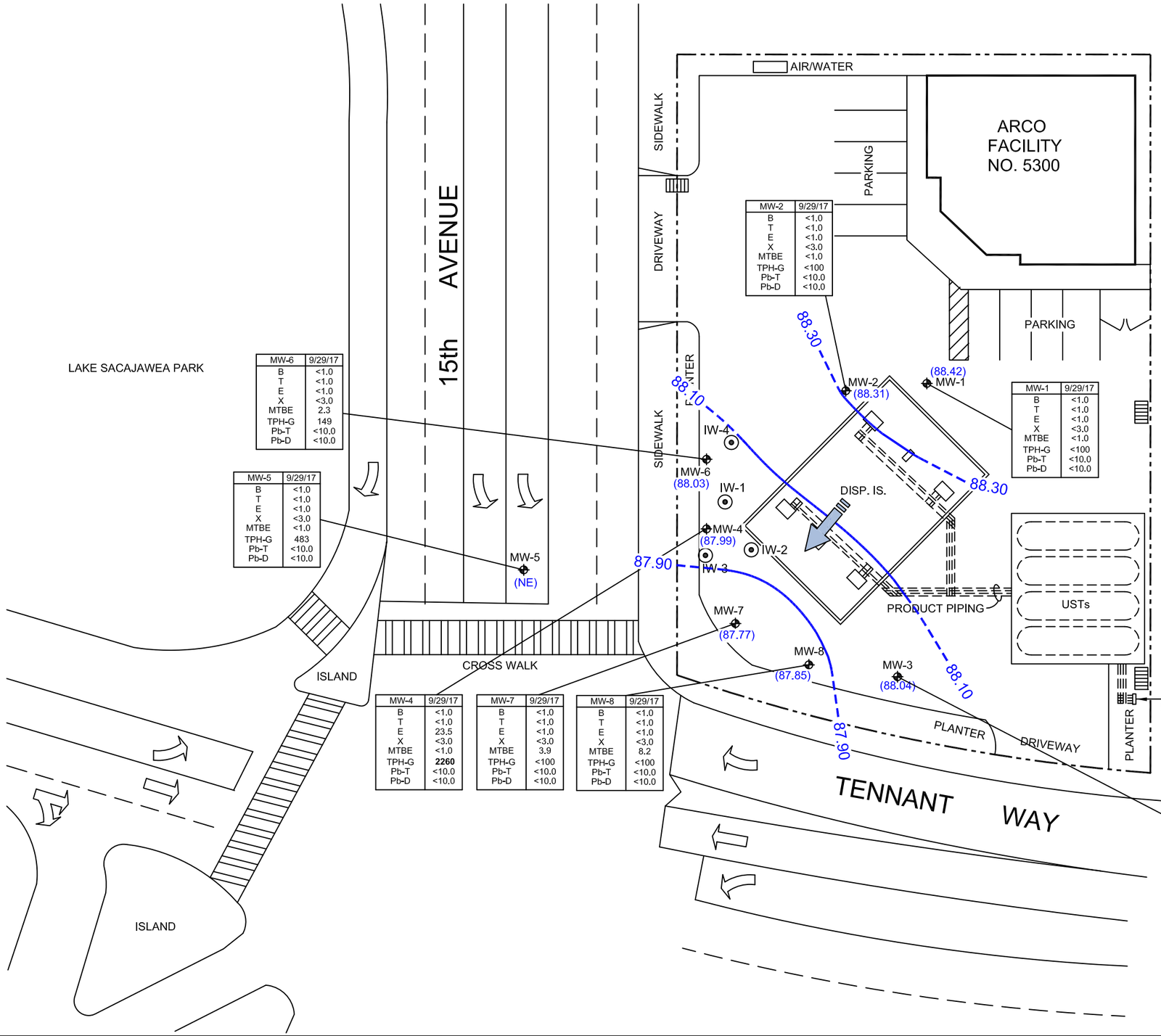
SCALE

SITE LOCATION

FIGURE 2
SITE AERIAL MAP
ARCO FACILITY NO. 5300
710 15th AVENUE
LONGVIEW, WASHINGTON

PROJECT NO. 5300EA121		DRN KM	
FILE NO. 5300G-Sam		PREPARED MS	
DATE 04 JUN 13	REV. 0	REVIEWED	

antea group



MW-6	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	2.3
TPH-G	149
Pb-T	<10.0
Pb-D	<10.0

MW-5	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	<1.0
TPH-G	483
Pb-T	<10.0
Pb-D	<10.0

MW-2	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	<1.0
TPH-G	<100
Pb-T	<10.0
Pb-D	<10.0

MW-1	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	<1.0
TPH-G	<100
Pb-T	<10.0
Pb-D	<10.0

MW-4	9/29/17
B	<1.0
T	<1.0
E	23.5
X	<3.0
MTBE	<1.0
TPH-G	**2260**
Pb-T	<10.0
Pb-D	<10.0

MW-7	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	3.9
TPH-G	<100
Pb-T	<10.0
Pb-D	<10.0

MW-8	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	8.2
TPH-G	<100
Pb-T	<10.0
Pb-D	<10.0

MW-3	9/29/17
B	<1.0
T	<1.0
E	<1.0
X	<3.0
MTBE	10.3
TPH-G	<100
Pb-T	<10.0
Pb-D	<10.0

LEGEND

- MW-1 — GROUNDWATER MONITORING WELL LOCATION
- PIPING
- IW-1 — INJECTION WELL LOCATION
- CATCH BASIN
- (88.42) — GROUNDWATER ELEVATION IN FEET RELATIVE TO AN ARBITRARY SITE DATUM
- 88.10 — INFERRED WATER TABLE CONTOUR IN FEET RELATIVE TO AN ARBITRARY SITE DATUM (CONTOUR INTERVAL: 0.20 ft)
- INFERRED GROUNDWATER FLOW DIRECTION: SW GROUNDWATER GRADIENT: 0.01 ft/LINEAR ft
- NE — NOT ESTABLISHED

GROUNDWATER DATA

MW-2	9/29/17	WELL ID/SAMPLE ID
B	<1.0	BENZENE IN µg/L
T	<1.0	TOLUENE IN µg/L
E	<1.0	ETHYLBENZENE IN µg/L
X	<3.0	TOTAL XYLENES IN µg/L
MTBE	<1.0	METHYL TERT-BUTYL ETHER IN µg/L
TPH-G	<100	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE IN µg/L
Pb-T	<10.0	TOTAL LEAD IN µg/L
Pb-D	<10.0	DISSOLVED LEAD IN µg/L

Notes:
<1.0 = Concentrations were not detected above the laboratory method reporting limit.
ug/L = Micrograms per liter (ppb)
Results in **bold** indicate concentrations in excess of Washington State Department of Ecology's Model Toxics Control Act (MTCA) Method A Cleanup Levels

N

0 30'

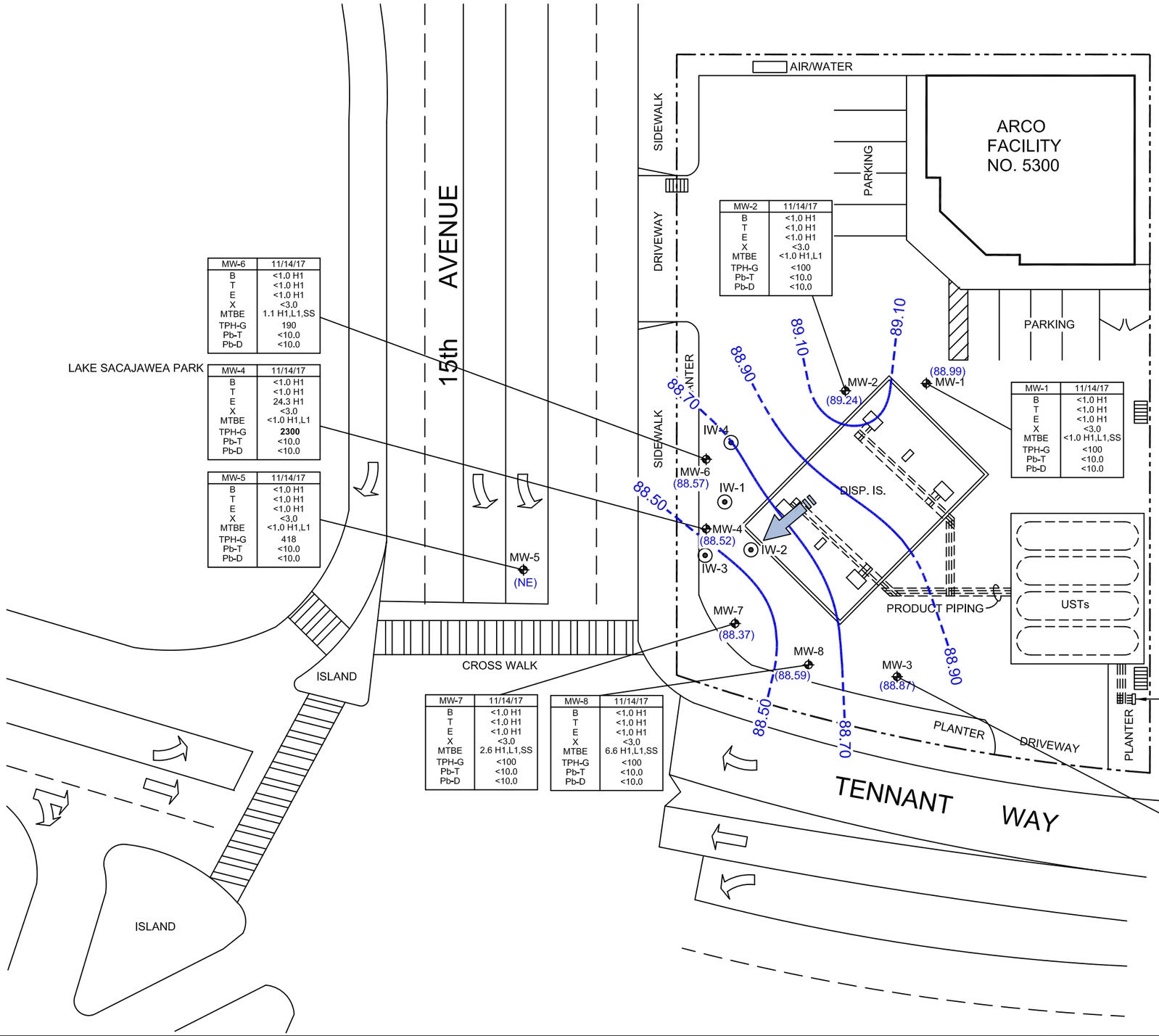
APPROX. SCALE

FIGURE 3
GROUNDWATER ANALYTICAL AND ELEVATION CONTOUR MAP - 9/29/2017

ARCO FACILITY NO. 5300
710 15th AVENUE
LONGVIEW, WA.

PROJECT NO. 05300SA271	DRAWN BY DR 1/30/18
FILE NO. AR-5300q -PROJINJ -3q17	PREPARED BY JG
REVISION NO. 1	REVIEWED BY MR

antea group



LEGEND

- MW-1 — GROUNDWATER MONITORING WELL LOCATION
- PIPING
- IW-1 — INJECTION WELL LOCATION
- CATCH BASIN
- (88.42) — GROUNDWATER ELEVATION IN FEET RELATIVE TO AN ARBITRARY SITE DATUM
- 89.10 — INFERRED WATER TABLE CONTOUR IN FEET RELATIVE TO AN ARBITRARY SITE DATUM (CONTOUR INTERVAL: 0.20 ft)
- INFERRED GROUNDWATER FLOW DIRECTION: SW GROUNDWATER GRADIENT: 0.01 ft/LINEAR ft
- NE — NOT ESTABLISHED

GROUNDWATER DATA

MW-2	11/14/17	WELL ID/SAMPLE ID
B	<1.0	BENZENE IN µg/L
T	<1.0	TOLUENE IN µg/L
E	<1.0	ETHYLBENZENE IN µg/L
X	<3.0	TOTAL XYLENES IN µg/L
MTBE	<1.0	METHYL TERT-BUTYL ETHER IN µg/L
TPH-G	<100	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE IN µg/L
Pb-T	<10.0	TOTAL LEAD IN µg/L
Pb-D	<10.0	DISSOLVED LEAD IN µg/L

Notes:
<1.0 = Concentrations were not detected above the laboratory method reporting limit.
ug/L = Micrograms per liter (ppb)
Results in **bold** indicate concentrations in excess of Washington State Department of Ecology's Model Toxics Control Act (MTCA) Method A Cleanup Levels
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
H1 = Analysis conducted outside the recognized method holding time.
SS = This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

N

0 30'

APPROX. SCALE

FIGURE 4
GROUNDWATER ANALYTICAL AND ELEVATION CONTOUR MAP - 11/14/2017

ARCO FACILITY NO. 5300
710 15th AVENUE
LONGVIEW, WA.

PROJECT NO. 05300SA271	DRAWN BY DR 2/23/18
FILE NO. -PROJINJ AR-5300q -Inj -4q17	PREPARED BY JG
REVISION NO. 1	REVIEWED BY MR

antea group

Appendix A

Analytical Lab Reports and Chain-of-Custody Documentation

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

October 18, 2017

Todd Vanek
Antea USA
4640 SW Macadam Ave.
Portland, OR 97239

RE: Project: Former ARCO 5300
Pace Project No.: 10405751

Dear Todd Vanek:
Enclosed are the analytical results for sample(s) received by the laboratory on October 03, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shawn Davis
shawn.davis@pacelabs.com
612-607-6378
Project Manager

Enclosures

cc: AG DataView, Antea Group
Brad Jackson, Antea USA - OR
Camille Rivera, The Antea Group
Missy Tracy, The Antea Group

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: Former ARCO 5300
Pace Project No.: 10405751

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970
Wyoming via EPA Region 8 Certification #: 8TMS-L

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: Former ARCO 5300
Pace Project No.: 10405751

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10405751001	**MW-1**	Water	09/29/17 10:35	10/03/17 09:45
10405751002	**MW-2**	Water	09/29/17 11:20	10/03/17 09:45
10405751003	**MW-3**	Water	09/29/17 13:35	10/03/17 09:45
10405751004	**MW-4**	Water	09/29/17 12:15	10/03/17 09:45
10405751005	**MW-5**	Water	09/29/17 10:55	10/03/17 09:45
10405751006	**MW-6**	Water	09/29/17 11:45	10/03/17 09:45
10405751007	**MW-7**	Water	09/29/17 12:45	10/03/17 09:45
10405751008	**MW-8**	Water	09/29/17 13:10	10/03/17 09:45
10405751009	**TB**	Water	09/29/17 00:00	10/03/17 09:45

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: Former ARCO 5300
Pace Project No.: 10405751

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10405751001	**MW-1**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	AEZ	8
10405751002	**MW-2**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	AEZ	8
10405751003	**MW-3**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	MRB	8
10405751004	**MW-4**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	AEZ	8
10405751005	**MW-5**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	MRB	8
10405751006	**MW-6**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	MRB	8
10405751007	**MW-7**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	MRB	8
10405751008	**MW-8**	NWTPH-Gx	AJK	2
		EPA 6010C	DM	1
		6010C Met	BD1	1
		EPA 8260B	MRB	8
10405751009	**TB**	NWTPH-Gx	AJK	2
		EPA 8260B	MRB	8

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10405751

Sample: MW-1 **Lab ID: 10405751001** Collected: 09/29/17 10:35 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		10/10/17 04:34		
Surrogates								
a,a,a-Trifluorotoluene (S)	88	%.	50-150	1		10/10/17 04:34	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:01	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 00:58	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/13/17 14:31	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/13/17 14:31	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/13/17 14:31	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/13/17 14:31	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/13/17 14:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-137	1		10/13/17 14:31	17060-07-0	
Toluene-d8 (S)	106	%.	75-125	1		10/13/17 14:31	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		10/13/17 14:31	460-00-4	

Sample: MW-2 **Lab ID: 10405751002** Collected: 09/29/17 11:20 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		10/10/17 07:06		
Surrogates								
a,a,a-Trifluorotoluene (S)	80	%.	50-150	1		10/10/17 07:06	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:15	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:12	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/13/17 14:48	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/13/17 14:48	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/13/17 14:48	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/13/17 14:48	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/13/17 14:48	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%.	75-137	1		10/13/17 14:48	17060-07-0	
Toluene-d8 (S)	107	%.	75-125	1		10/13/17 14:48	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10405751

Sample: MW-2 **Lab ID: 10405751002** Collected: 09/29/17 11:20 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B							
Surrogates								
4-Bromofluorobenzene (S)	102	%.	75-125	1		10/13/17 14:48	460-00-4	

Sample: MW-3 **Lab ID: 10405751003** Collected: 09/29/17 13:35 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		10/10/17 07:22		
Surrogates								
a,a,a-Trifluorotoluene (S)	81	%.	50-150	1		10/10/17 07:22	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:18	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:15	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/12/17 20:37	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/12/17 20:37	100-41-4	
Methyl-tert-butyl ether	**10.3**	ug/L	1.0	1		10/12/17 20:37	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/12/17 20:37	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/12/17 20:37	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	117	%.	75-137	1		10/12/17 20:37	17060-07-0	
Toluene-d8 (S)	103	%.	75-125	1		10/12/17 20:37	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125	1		10/12/17 20:37	460-00-4	

Sample: MW-4 **Lab ID: 10405751004** Collected: 09/29/17 12:15 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**2260**	ug/L	100	1		10/10/17 07:39		
Surrogates								
a,a,a-Trifluorotoluene (S)	111	%.	50-150	1		10/10/17 07:39	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:21	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:18	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10405751

Sample: MW-4 **Lab ID: 10405751004** Collected: 09/29/17 12:15 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/13/17 15:06	71-43-2	
Ethylbenzene	**23.5**	ug/L	1.0	1		10/13/17 15:06	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/13/17 15:06	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/13/17 15:06	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/13/17 15:06	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%.	75-137	1		10/13/17 15:06	17060-07-0	
Toluene-d8 (S)	108	%.	75-125	1		10/13/17 15:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		10/13/17 15:06	460-00-4	

Sample: MW-5 **Lab ID: 10405751005** Collected: 09/29/17 10:55 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**483**	ug/L	100	1		10/10/17 23:37		
Surrogates								
a,a,a-Trifluorotoluene (S)	89	%.	50-150	1		10/10/17 23:37	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:29	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:26	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/12/17 20:54	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/12/17 20:54	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/12/17 20:54	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/12/17 20:54	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/12/17 20:54	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	111	%.	75-137	1		10/12/17 20:54	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		10/12/17 20:54	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		10/12/17 20:54	460-00-4	

Sample: MW-6 **Lab ID: 10405751006** Collected: 09/29/17 11:45 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**149**	ug/L	100	1		10/10/17 23:20		
Surrogates								
a,a,a-Trifluorotoluene (S)	103	%.	50-150	1		10/10/17 23:20	98-08-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10405751

Sample: MW-6 **Lab ID: 10405751006** Collected: 09/29/17 11:45 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:32	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:29	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/12/17 21:10	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/12/17 21:10	100-41-4	
Methyl-tert-butyl ether	**2.3**	ug/L	1.0	1		10/12/17 21:10	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/12/17 21:10	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/12/17 21:10	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	113	%.	75-137	1		10/12/17 21:10	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		10/12/17 21:10	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1		10/12/17 21:10	460-00-4	

Sample: MW-7 **Lab ID: 10405751007** Collected: 09/29/17 12:45 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		10/10/17 08:30		
Surrogates								
a,a,a-Trifluorotoluene (S)	80	%.	50-150	1		10/10/17 08:30	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:35	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:32	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/12/17 21:27	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/12/17 21:27	100-41-4	
Methyl-tert-butyl ether	**3.9**	ug/L	1.0	1		10/12/17 21:27	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/12/17 21:27	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/12/17 21:27	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	116	%.	75-137	1		10/12/17 21:27	17060-07-0	
Toluene-d8 (S)	103	%.	75-125	1		10/12/17 21:27	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1		10/12/17 21:27	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10405751

Sample: MW-8 **Lab ID: 10405751008** Collected: 09/29/17 13:10 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		10/10/17 08:47		
Surrogates								
a,a,a-Trifluorotoluene (S)	86	%.	50-150	1		10/10/17 08:47	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	10/09/17 10:37	10/10/17 06:38	7439-92-1	
6010C MET ICP, Dissolved	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	10/10/17 10:15	10/11/17 01:35	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/12/17 21:43	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/12/17 21:43	100-41-4	
Methyl-tert-butyl ether	**8.2**	ug/L	1.0	1		10/12/17 21:43	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/12/17 21:43	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/12/17 21:43	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%.	75-137	1		10/12/17 21:43	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		10/12/17 21:43	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		10/12/17 21:43	460-00-4	

Sample: TB **Lab ID: 10405751009** Collected: 09/29/17 00:00 Received: 10/03/17 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		10/10/17 09:21		HS
Surrogates								
a,a,a-Trifluorotoluene (S)	81	%.	50-150	1		10/10/17 09:21	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		10/12/17 17:24	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		10/12/17 17:24	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/12/17 17:24	1634-04-4	
Toluene	ND	ug/L	1.0	1		10/12/17 17:24	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		10/12/17 17:24	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	117	%.	75-137	1		10/12/17 17:24	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		10/12/17 17:24	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125	1		10/12/17 17:24	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

QC Batch: 501398 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751007, 10405751008, 10405751009

METHOD BLANK: 2725619 Matrix: Water
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751007, 10405751008, 10405751009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	10/10/17 04:00	
a,a,a-Trifluorotoluene (S)	%.	87	50-150	10/10/17 04:00	

METHOD BLANK: 2725620 Matrix: Water
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751007, 10405751008, 10405751009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	10/10/17 04:17	
a,a,a-Trifluorotoluene (S)	%.	83	50-150	10/10/17 04:17	

LABORATORY CONTROL SAMPLE & LCSD: 2725621 2725622

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	912	904	91	90	30-150	1	20	
a,a,a-Trifluorotoluene (S)	%.				93	95	50-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2725623 2725624

Parameter	Units	10405751001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH as Gas	ug/L	ND	1000	1000	929	920	89	88	73-125	1	30	
a,a,a-Trifluorotoluene (S)	%.						92	93	50-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

QC Batch: 501692 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10405751005, 10405751006

METHOD BLANK: 2726762 Matrix: Water
Associated Lab Samples: 10405751005, 10405751006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	10/10/17 23:03	
a,a,a-Trifluorotoluene (S)	%.	86	50-150	10/10/17 23:03	

LABORATORY CONTROL SAMPLE & LCSD: 2726764 2726765

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	894	851	89	85	30-150	5	20	
a,a,a-Trifluorotoluene (S)	%.				96	93	50-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

QC Batch: 501002 Analysis Method: EPA 6010C
QC Batch Method: EPA 3010 Analysis Description: 6010C Water
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751005, 10405751006, 10405751007, 10405751008

METHOD BLANK: 2723640 Matrix: Water
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751005, 10405751006, 10405751007, 10405751008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	10.0	10/10/17 05:55	

LABORATORY CONTROL SAMPLE: 2723641

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	1000	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2723642 2723643

Parameter	Units	10405751001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	ND	1000	1000	986	998	98	100	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

QC Batch: 501003 Analysis Method: 6010C Met
QC Batch Method: EPA 3010 Analysis Description: 6010C Water Dissolved
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751005, 10405751006, 10405751007, 10405751008

METHOD BLANK: 2723644 Matrix: Water
Associated Lab Samples: 10405751001, 10405751002, 10405751003, 10405751004, 10405751005, 10405751006, 10405751007, 10405751008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	ND	10.0	10/11/17 00:52	

LABORATORY CONTROL SAMPLE: 2723645

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	1000	992	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2723646 2723647

Parameter	Units	10405751001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead, Dissolved	ug/L	ND	1000	1000	999	980	100	98	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

QC Batch: 502252 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10405751003, 10405751005, 10405751006, 10405751007, 10405751008, 10405751009

METHOD BLANK: 2729801 Matrix: Water
Associated Lab Samples: 10405751003, 10405751005, 10405751006, 10405751007, 10405751008, 10405751009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	10/12/17 16:35	
Ethylbenzene	ug/L	ND	1.0	10/12/17 16:35	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/12/17 16:35	
Toluene	ug/L	ND	1.0	10/12/17 16:35	
Xylene (Total)	ug/L	ND	3.0	10/12/17 16:35	
1,2-Dichloroethane-d4 (S)	%.	110	75-137	10/12/17 16:35	
4-Bromofluorobenzene (S)	%.	99	75-125	10/12/17 16:35	
Toluene-d8 (S)	%.	102	75-125	10/12/17 16:35	

LABORATORY CONTROL SAMPLE & LCSD: 2729802 2729803

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	50	51.9	51.5	104	103	74-125	1	20	
Ethylbenzene	ug/L	50	52.5	52.1	105	104	73-125	1	20	
Methyl-tert-butyl ether	ug/L	50	59.0	58.4	118	117	70-130	1	20	
Toluene	ug/L	50	46.6	47.3	93	95	75-125	2	20	
Xylene (Total)	ug/L	150	157	155	105	104	75-125	1	20	
1,2-Dichloroethane-d4 (S)	%.				102	103	75-137			
4-Bromofluorobenzene (S)	%.				91	94	75-125			
Toluene-d8 (S)	%.				98	99	75-125			

MATRIX SPIKE SAMPLE: 2729804

Parameter	Units	10406326001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	<0.34	20	18.3	91	74-134	
Ethylbenzene	ug/L	<0.14	20	18.2	91	75-136	
Methyl-tert-butyl ether	ug/L	<0.40	20	21.4	107	75-128	
Toluene	ug/L	<0.17	20	17.0	84	71-138	
Xylene (Total)	ug/L	<0.24	60	50.2	84	75-131	
1,2-Dichloroethane-d4 (S)	%.				107	75-137	
4-Bromofluorobenzene (S)	%.				95	75-125	
Toluene-d8 (S)	%.				98	75-125	

SAMPLE DUPLICATE: 2729805

Parameter	Units	10406326002 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	<0.34	ND		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

SAMPLE DUPLICATE: 2729805

Parameter	Units	10406326002 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethylbenzene	ug/L	<0.14	ND		30	
Methyl-tert-butyl ether	ug/L	<0.40	ND		30	
Toluene	ug/L	<0.17	ND		30	
Xylene (Total)	ug/L	<0.24	ND		30	
1,2-Dichloroethane-d4 (S)	%.	114	114	0		
4-Bromofluorobenzene (S)	%.	97	100	2		
Toluene-d8 (S)	%.	103	105	2		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10405751

QC Batch: 502418 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10405751001, 10405751002, 10405751004

METHOD BLANK: 2730697 Matrix: Water
Associated Lab Samples: 10405751001, 10405751002, 10405751004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	10/13/17 09:32	
Ethylbenzene	ug/L	ND	1.0	10/13/17 09:32	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/13/17 09:32	
Toluene	ug/L	ND	1.0	10/13/17 09:32	
Xylene (Total)	ug/L	ND	3.0	10/13/17 09:32	
1,2-Dichloroethane-d4 (S)	%.	104	75-137	10/13/17 09:32	
4-Bromofluorobenzene (S)	%.	101	75-125	10/13/17 09:32	
Toluene-d8 (S)	%.	109	75-125	10/13/17 09:32	

LABORATORY CONTROL SAMPLE: 2730698

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	44.0	88	74-125	
Ethylbenzene	ug/L	50	52.9	106	73-125	
Methyl-tert-butyl ether	ug/L	50	41.8	84	70-130	
Toluene	ug/L	50	52.3	105	75-125	
Xylene (Total)	ug/L	150	153	102	75-125	
1,2-Dichloroethane-d4 (S)	%.			93	75-137	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			109	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2730809 2730810

Parameter	Units	10405706005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	<10.0	200	200	191	167	96	83	74-134	14	30	
Ethylbenzene	ug/L	<10.0	200	200	227	207	114	104	75-136	9	30	
Methyl-tert-butyl ether	ug/L	1950	200	200	2050	2020	48	38	75-128	1	30	M1
Toluene	ug/L	<10.0	200	200	219	202	109	100	71-138	8	30	
Xylene (Total)	ug/L	<30.0	600	600	661	600	110	100	75-131	10	30	
1,2-Dichloroethane-d4 (S)	%.						93	93	75-137			
4-Bromofluorobenzene (S)	%.						99	100	75-125			
Toluene-d8 (S)	%.						108	109	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: Former ARCO 5300
Pace Project No.: 10405751

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 502252

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

HS Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Former ARCO 5300
Pace Project No.: 10405751

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10405751001	**MW-1**	NWTPH-Gx	501398		
10405751002	**MW-2**	NWTPH-Gx	501398		
10405751003	**MW-3**	NWTPH-Gx	501398		
10405751004	**MW-4**	NWTPH-Gx	501398		
10405751005	**MW-5**	NWTPH-Gx	501692		
10405751006	**MW-6**	NWTPH-Gx	501692		
10405751007	**MW-7**	NWTPH-Gx	501398		
10405751008	**MW-8**	NWTPH-Gx	501398		
10405751009	**TB**	NWTPH-Gx	501398		
10405751001	**MW-1**	EPA 3010	501002	EPA 6010C	501512
10405751002	**MW-2**	EPA 3010	501002	EPA 6010C	501512
10405751003	**MW-3**	EPA 3010	501002	EPA 6010C	501512
10405751004	**MW-4**	EPA 3010	501002	EPA 6010C	501512
10405751005	**MW-5**	EPA 3010	501002	EPA 6010C	501512
10405751006	**MW-6**	EPA 3010	501002	EPA 6010C	501512
10405751007	**MW-7**	EPA 3010	501002	EPA 6010C	501512
10405751008	**MW-8**	EPA 3010	501002	EPA 6010C	501512
10405751001	**MW-1**	EPA 3010	501003	6010C Met	501638
10405751002	**MW-2**	EPA 3010	501003	6010C Met	501638
10405751003	**MW-3**	EPA 3010	501003	6010C Met	501638
10405751004	**MW-4**	EPA 3010	501003	6010C Met	501638
10405751005	**MW-5**	EPA 3010	501003	6010C Met	501638
10405751006	**MW-6**	EPA 3010	501003	6010C Met	501638
10405751007	**MW-7**	EPA 3010	501003	6010C Met	501638
10405751008	**MW-8**	EPA 3010	501003	6010C Met	501638
10405751001	**MW-1**	EPA 8260B	502418		
10405751002	**MW-2**	EPA 8260B	502418		
10405751003	**MW-3**	EPA 8260B	502252		
10405751004	**MW-4**	EPA 8260B	502418		
10405751005	**MW-5**	EPA 8260B	502252		
10405751006	**MW-6**	EPA 8260B	502252		
10405751007	**MW-7**	EPA 8260B	502252		
10405751008	**MW-8**	EPA 8260B	502252		
10405751009	**TB**	EPA 8260B	502252		

10405751

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: Former ARCO 5300
BP/ARC Facility No: Former ARCO Facility No. 5300
Req Due Date (mm/dd/yy): Standart TAT
Rush TAT: Yes ___ No X
Lab Work Order Number:

Lab Name: Pace Analytical	BP/ARC Facility Address: 710 15th Street	Consultant/Contractor: Antea Group
Lab Address: 1700 Elm St. Minneapolis, MN 55414	City, State, ZIP Code: Longview, WA	Consultant/Contractor Project No: 053005A271
Lab PM: Shawn Davis	Lead Regulatory Agency: Washington State Department of Ecology	Address: 4006 148th Ave NE, Redmond, WA 98052
Lab Phone: 612-607-6402	California Global ID No.: NA	Consultant/Contractor PM: Megan Richard
Lab Shipping Accnt:	Enfos Proposal No: 009V4-0004/WR3137782	Phone: 425-498-7711
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: megan.richard@anteagroup.com
Other Info:	Stage: 40 Activity: 80	Invoice To: BP/ARC X Contractor ___
BP/ARC EBM: Chuck Carmel		
EBM Phone: (657) 529-4503		
EBM Email: charles.carmel@bp.com		

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	$Na2S2O3$	Requested Analyses: BTEX	MTBE	NWTPH-Gx	NWTPH-Dx	NWTPH-O	Pb-T by EPA 6010	Pb-D by EPA 6010	EDB by EPA 8011	EDC by EPA 8260B		Report Type & QC Level: Comments
	MW-1	9/29/17	1035		x			8						x	x	x			x	x				001
	MW-2		1120		x			8						x	x	x			x	x				002
	MW-3		1335		x			8						x	x	x			x	x				003
	MW-4		1215		x			8						x	x	x			x	x				004
	MW-5		1055		x			8						x	x	x			x	x				005
	MW-6		1145		x			8						x	x	x			x	x				006
	MW-7		1245		x			8						x	x	x			x	x				007
	MW-8	9/29/17	1310		x			8						x	x	x			x	x				008
	TB	—	—		x			6						x		x								009

Standard X w/ Access
Full Data Package ___

Sampler's Name: Nolan Lewis / Missy Tracy	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Antea Group	Missy Tracy / Antea	10/2/17	1000		10/3/17	945
Shipment Method: FedEX Ship Date: 10/2/17						
Shipment Tracking No:						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 2.5/2.5 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Page 19 of 120

BP/ARC LaMP COC Rev. 6 01/01/2009

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form - ESI**	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: **F-MN-L-210-rev.23**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP-Antea

Project #: WO#: 10405751

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 7703-9313-9977 / 95603

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.7/3.0 **Cooler Temp Corrected (°C):** 2.5/2.8 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C **Correction Factor:** -0.2 **Date and Initials of Person Examining Contents:** 10/3/17 SD

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume (triple volume provided for MS/MSD)?	☒ Yes	☐ No		8.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		9.
Containers Intact?	☒ Yes	☐ No		10. 10/5/17 SD
Filtered Volume Received for Dissolved Tests?	☐ Yes	☒ No	☒ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☒ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, NaOH>9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water) and Dioxin. Per method, VOA pH is checked after analysis	☒ Yes	☐ No	☐ N/A	Sample # 1-8 1/1
	☒ Yes	☐ No	☒ N/A	Initial when completed: 10/3/17 SD Lot # of added preservative: 3
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14. Less than 6mm, 003 3/6; 5/6 1/6; 008 3/6
3 Trip Blanks Present?	☒ Yes	☐ No	☐ N/A	15. Only 4 TB. COC says 6
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased): 131707				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins	
Opened Time: 1425 Temp: 2.7/3.0	Corrected Temp: 2.5/2.8
Time: put in cooler	
Time: 1530 Temp: 2.7/3.0	Corrected Temp: 2.5/2.8

Project Manager Review: Shauna Davis **Date:** 10/5/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

December 01, 2017

Megan Richard
Antea Group[

,

RE: Project: Former ARCO 5300
Pace Project No.: 10411602

Dear Megan Richard:
Enclosed are the analytical results for sample(s) received by the laboratory on November 17, 2017. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shawn Davis
shawn.davis@pacelabs.com
612-607-6378
Project Manager

Enclosures

cc: AG DataView, Antea Group
Brad Jackson, Antea USA - OR
Camille Rivera, The Antea Group
Taylor Roberts, Antea Group
Jaime Sasse, Antea Group
Mackie Stock, Antea Group
Missy Tracy, The Antea Group
Todd Vanek, Antea USA
AG Data View, Antea Group

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: Former ARCO 5300
Pace Project No.: 10411602

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: Former ARCO 5300
Pace Project No.: 10411602

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10411602001	**MW-1**	Water	11/14/17 13:00	11/17/17 09:30
10411602002	**MW-2**	Water	11/14/17 12:45	11/17/17 09:30
10411602003	**MW-3**	Water	11/14/17 15:15	11/17/17 09:30
10411602004	**MW-4**	Water	11/14/17 14:00	11/17/17 09:30
10411602005	**MW-5**	Water	11/14/17 13:35	11/17/17 09:30
10411602006	**MW-6**	Water	11/14/17 13:20	11/17/17 09:30
10411602007	**MW-7**	Water	11/14/17 14:25	11/17/17 09:30
10411602008	**MW-8**	Water	11/14/17 14:50	11/17/17 09:30
10411602009	**TB**	Water	11/14/17 00:00	11/17/17 09:30

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: Former ARCO 5300
Pace Project No.: 10411602

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10411602001	**MW-1**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602002	**MW-2**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602003	**MW-3**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602004	**MW-4**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602005	**MW-5**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602006	**MW-6**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602007	**MW-7**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602008	**MW-8**	NWTPH-Gx	AJK	2	PASI-M
		EPA 6010C	BD1	1	PASI-M
		6010C Met	IP	1	PASI-M
		EPA 8260B	DJB	8	PASI-M
10411602009	**TB**	NWTPH-Gx	AJK	2	PASI-M
		EPA 8260B	DJB	8	PASI-M

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: Former ARCO 5300
Pace Project No.: 10411602

Method: **NWTPH-Gx**
Description: NWTPH-Gx GCV
Client: BP-Antea Group OR
Date: December 01, 2017

General Information:
9 samples were analyzed for NWTPH-Gx. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: Former ARCO 5300
Pace Project No.: 10411602

Method: **EPA 6010C**
Description: 6010C MET ICP
Client: BP-Antea Group OR
Date: December 01, 2017

General Information:
8 samples were analyzed for EPA 6010C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: Former ARCO 5300
Pace Project No.: 10411602

Method: **6010C Met**
Description: 6010C MET ICP, Lab Filtered
Client: BP-Antea Group OR
Date: December 01, 2017

General Information:
8 samples were analyzed for 6010C Met. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: Former ARCO 5300
Pace Project No.: 10411602

Method: **EPA 8260B**
Description: 8260B MSV UST
Client: BP-Antea Group OR
Date: December 01, 2017

General Information:
9 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H1: Analysis conducted outside the recognized method holding time.
- MW-1 (Lab ID: 10411602001)
- MW-2 (Lab ID: 10411602002)
- MW-3 (Lab ID: 10411602003)
- MW-4 (Lab ID: 10411602004)
- MW-5 (Lab ID: 10411602005)
- MW-6 (Lab ID: 10411602006)
- MW-7 (Lab ID: 10411602007)
- MW-8 (Lab ID: 10411602008)

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

QC Batch: 510656

SS: This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
- LCS (Lab ID: 2776811)
  - Methyl-tert-butyl ether
- MS (Lab ID: 2778274)
  - Methyl-tert-butyl ether
- MSD (Lab ID: 2778275)
  - Methyl-tert-butyl ether
- MW-1 (Lab ID: 10411602001)
  - Methyl-tert-butyl ether
- MW-3 (Lab ID: 10411602003)
  - Methyl-tert-butyl ether
- MW-6 (Lab ID: 10411602006)
  - Methyl-tert-butyl ether
- MW-7 (Lab ID: 10411602007)
  - Methyl-tert-butyl ether
- MW-8 (Lab ID: 10411602008)
  - Methyl-tert-butyl ether

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: Former ARCO 5300
Pace Project No.: 10411602

Method: **EPA 8260B**
Description: 8260B MSV UST
Client: BP-Antea Group OR
Date: December 01, 2017

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 510656

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2776811)
  - Methyl-tert-butyl ether

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-1 **Lab ID: 10411602001** Collected: 11/14/17 13:00 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		11/20/17 14:38		
Surrogates								
a,a,a-Trifluorotoluene (S)	81	%.	50-150	1		11/20/17 14:38	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 00:14	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 09:37	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 00:15	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 00:15	100-41-4	H1
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/29/17 00:15	1634-04-4	H1,L1, SS
Toluene	ND	ug/L	1.0	1		11/29/17 00:15	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 00:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%.	75-137	1		11/29/17 00:15	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		11/29/17 00:15	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		11/29/17 00:15	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-2 **Lab ID: 10411602002** Collected: 11/14/17 12:45 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		11/20/17 14:56		
Surrogates								
a,a,a-Trifluorotoluene (S)	86	%.	50-150	1		11/20/17 14:56	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 00:41	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:18	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 00:50	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 00:50	100-41-4	H1
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/29/17 00:50	1634-04-4	H1,L1
Toluene	ND	ug/L	1.0	1		11/29/17 00:50	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 00:50	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-137	1		11/29/17 00:50	17060-07-0	
Toluene-d8 (S)	105	%.	75-125	1		11/29/17 00:50	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		11/29/17 00:50	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-3 **Lab ID: 10411602003** Collected: 11/14/17 15:15 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		11/20/17 15:13		
Surrogates								
a,a,a-Trifluorotoluene (S)	83	%.	50-150	1		11/20/17 15:13	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 00:45	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:22	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 01:08	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 01:08	100-41-4	H1
Methyl-tert-butyl ether	**5.4**	ug/L	1.0	1		11/29/17 01:08	1634-04-4	H1,L1, SS
Toluene	ND	ug/L	1.0	1		11/29/17 01:08	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 01:08	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%.	75-137	1		11/29/17 01:08	17060-07-0	HS
Toluene-d8 (S)	103	%.	75-125	1		11/29/17 01:08	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		11/29/17 01:08	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-4 **Lab ID: 10411602004** Collected: 11/14/17 14:00 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**2300**	ug/L	100	1		11/20/17 15:31		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	50-150	1		11/20/17 15:31	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 00:48	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:26	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 01:25	71-43-2	H1
Ethylbenzene	**24.3**	ug/L	1.0	1		11/29/17 01:25	100-41-4	H1
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/29/17 01:25	1634-04-4	H1,L1
Toluene	ND	ug/L	1.0	1		11/29/17 01:25	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 01:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%.	75-137	1		11/29/17 01:25	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		11/29/17 01:25	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		11/29/17 01:25	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-5 **Lab ID: 10411602005** Collected: 11/14/17 13:35 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**418**	ug/L	100	1		11/20/17 16:23		
Surrogates								
a,a,a-Trifluorotoluene (S)	92	%.	50-150	1		11/20/17 16:23	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 00:52	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:29	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 01:42	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 01:42	100-41-4	H1
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/29/17 01:42	1634-04-4	H1,L1
Toluene	ND	ug/L	1.0	1		11/29/17 01:42	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 01:42	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%.	75-137	1		11/29/17 01:42	17060-07-0	HS
Toluene-d8 (S)	104	%.	75-125	1		11/29/17 01:42	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		11/29/17 01:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-6 **Lab ID: 10411602006** Collected: 11/14/17 13:20 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**190**	ug/L	100	1		11/20/17 12:02		
Surrogates								
a,a,a-Trifluorotoluene (S)	86	%.	50-150	1		11/20/17 12:02	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 00:56	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:33	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 02:00	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 02:00	100-41-4	H1
Methyl-tert-butyl ether	**1.1**	ug/L	1.0	1		11/29/17 02:00	1634-04-4	H1,L1, SS
Toluene	ND	ug/L	1.0	1		11/29/17 02:00	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 02:00	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-137	1		11/29/17 02:00	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		11/29/17 02:00	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		11/29/17 02:00	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-7 **Lab ID: 10411602007** Collected: 11/14/17 14:25 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		11/20/17 12:54		
Surrogates								
a,a,a-Trifluorotoluene (S)	86	%.	50-150	1		11/20/17 12:54	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 01:19	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:37	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 02:17	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 02:17	100-41-4	H1
Methyl-tert-butyl ether	**2.6**	ug/L	1.0	1		11/29/17 02:17	1634-04-4	H1,L1, SS
Toluene	ND	ug/L	1.0	1		11/29/17 02:17	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 02:17	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-137	1		11/29/17 02:17	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		11/29/17 02:17	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		11/29/17 02:17	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: MW-8 **Lab ID: 10411602008** Collected: 11/14/17 14:50 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		11/20/17 15:48		
Surrogates								
a,a,a-Trifluorotoluene (S)	83	%.	50-150	1		11/20/17 15:48	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3010							
Lead	ND	ug/L	10.0	1	11/22/17 10:38	11/30/17 01:23	7439-92-1	
6010C MET ICP, Lab Filtered	Analytical Method: 6010C Met Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	10.0	1	11/30/17 09:36	12/01/17 10:49	7439-92-1	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/29/17 02:35	71-43-2	H1
Ethylbenzene	ND	ug/L	1.0	1		11/29/17 02:35	100-41-4	H1
Methyl-tert-butyl ether	**6.6**	ug/L	1.0	1		11/29/17 02:35	1634-04-4	H1,L1, SS
Toluene	ND	ug/L	1.0	1		11/29/17 02:35	108-88-3	H1
Xylene (Total)	ND	ug/L	3.0	1		11/29/17 02:35	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-137	1		11/29/17 02:35	17060-07-0	HS
Toluene-d8 (S)	102	%.	75-125	1		11/29/17 02:35	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		11/29/17 02:35	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Former ARCO 5300
Pace Project No.: 10411602

Sample: TB **Lab ID: 10411602009** Collected: 11/14/17 00:00 Received: 11/17/17 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		11/20/17 13:46		
Surrogates								
a,a,a-Trifluorotoluene (S)	80	%.	50-150	1		11/20/17 13:46	98-08-8	
8260B MSV UST	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	1.0	1		11/28/17 23:58	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		11/28/17 23:58	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/28/17 23:58	1634-04-4	L1
Toluene	ND	ug/L	1.0	1		11/28/17 23:58	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		11/28/17 23:58	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%.	75-137	1		11/28/17 23:58	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		11/28/17 23:58	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		11/28/17 23:58	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10411602

QC Batch: 509559 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008, 10411602009

METHOD BLANK: 2770584 Matrix: Water
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008, 10411602009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	11/20/17 11:28	
a,a,a-Trifluorotoluene (S)	%.	81	50-150	11/20/17 11:28	

LABORATORY CONTROL SAMPLE & LCSD: 2770586 2770587

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	911	854	91	85	30-150	6	20	
a,a,a-Trifluorotoluene (S)	%.				93	91	50-150			

MATRIX SPIKE SAMPLE: 2770588

Parameter	Units	10411602006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	190	1000	947	76	73-125	
a,a,a-Trifluorotoluene (S)	%.				87	50-150	

SAMPLE DUPLICATE: 2770589

Parameter	Units	10411602007 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	29.7J		30	
a,a,a-Trifluorotoluene (S)	%.	86	83	4		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10411602

QC Batch: 509516 Analysis Method: EPA 6010C
QC Batch Method: EPA 3010 Analysis Description: 6010C Water
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008

METHOD BLANK: 2770501 Matrix: Water
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	10.0	11/29/17 23:58	

LABORATORY CONTROL SAMPLE: 2770502

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	928	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2770503 2770504

Parameter	Units	10411602001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	ND	1000	1000	967	971	96	97	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10411602

QC Batch: 509517 Analysis Method: 6010C Met
QC Batch Method: EPA 3010 Analysis Description: 6010C Water Dissolved
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008

METHOD BLANK: 2770505 Matrix: Water
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	ND	10.0	12/01/17 09:30	

LABORATORY CONTROL SAMPLE: 2770506

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	1000	1040	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2770507 2770508

Parameter	Units	10411602001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead, Dissolved	ug/L	ND	1000	1000	1040	1050	103	104	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Former ARCO 5300
Pace Project No.: 10411602

QC Batch: 510656 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008, 10411602009

METHOD BLANK: 2776810 Matrix: Water
Associated Lab Samples: 10411602001, 10411602002, 10411602003, 10411602004, 10411602005, 10411602006, 10411602007, 10411602008, 10411602009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	11/28/17 23:41	
Ethylbenzene	ug/L	ND	1.0	11/28/17 23:41	
Methyl-tert-butyl ether	ug/L	ND	1.0	11/28/17 23:41	
Toluene	ug/L	ND	1.0	11/28/17 23:41	
Xylene (Total)	ug/L	ND	3.0	11/28/17 23:41	
1,2-Dichloroethane-d4 (S)	%.	103	75-137	11/28/17 23:41	
4-Bromofluorobenzene (S)	%.	100	75-125	11/28/17 23:41	
Toluene-d8 (S)	%.	101	75-125	11/28/17 23:41	

LABORATORY CONTROL SAMPLE: 2776811

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.4	102	74-125	
Ethylbenzene	ug/L	20	20.6	103	73-125	
Methyl-tert-butyl ether	ug/L	20	27.0	135	70-130	L1,SS
Toluene	ug/L	20	21.7	109	75-125	
Xylene (Total)	ug/L	60	65.1	108	75-125	
1,2-Dichloroethane-d4 (S)	%.			97	75-137	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			101	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2778274 2778275

Parameter	Units	10411602001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	18.8	19.2	94	96	74-134	2	30	
Ethylbenzene	ug/L	ND	20	20	19.9	20.2	99	101	75-136	2	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	16.4	16.3	82	82	75-128	0	30	SS
Toluene	ug/L	ND	20	20	20.1	20.6	101	103	71-138	2	30	
Xylene (Total)	ug/L	ND	60	60	61.4	62.5	102	104	75-131	2	30	
1,2-Dichloroethane-d4 (S)	%.						97	96	75-137			
4-Bromofluorobenzene (S)	%.						102	101	75-125			
Toluene-d8 (S)	%.						102	100	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: Former ARCO 5300
Pace Project No.: 10411602

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

H1	Analysis conducted outside the recognized method holding time.
HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Former ARCO 5300
Pace Project No.: 10411602

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10411602001	**MW-1**	NWTPH-Gx	509559		
10411602002	**MW-2**	NWTPH-Gx	509559		
10411602003	**MW-3**	NWTPH-Gx	509559		
10411602004	**MW-4**	NWTPH-Gx	509559		
10411602005	**MW-5**	NWTPH-Gx	509559		
10411602006	**MW-6**	NWTPH-Gx	509559		
10411602007	**MW-7**	NWTPH-Gx	509559		
10411602008	**MW-8**	NWTPH-Gx	509559		
10411602009	**TB**	NWTPH-Gx	509559		
10411602001	**MW-1**	EPA 3010	509516	EPA 6010C	510361
10411602002	**MW-2**	EPA 3010	509516	EPA 6010C	510361
10411602003	**MW-3**	EPA 3010	509516	EPA 6010C	510361
10411602004	**MW-4**	EPA 3010	509516	EPA 6010C	510361
10411602005	**MW-5**	EPA 3010	509516	EPA 6010C	510361
10411602006	**MW-6**	EPA 3010	509516	EPA 6010C	510361
10411602007	**MW-7**	EPA 3010	509516	EPA 6010C	510361
10411602008	**MW-8**	EPA 3010	509516	EPA 6010C	510361
10411602001	**MW-1**	EPA 3010	509517	6010C Met	511223
10411602002	**MW-2**	EPA 3010	509517	6010C Met	511223
10411602003	**MW-3**	EPA 3010	509517	6010C Met	511223
10411602004	**MW-4**	EPA 3010	509517	6010C Met	511223
10411602005	**MW-5**	EPA 3010	509517	6010C Met	511223
10411602006	**MW-6**	EPA 3010	509517	6010C Met	511223
10411602007	**MW-7**	EPA 3010	509517	6010C Met	511223
10411602008	**MW-8**	EPA 3010	509517	6010C Met	511223
10411602001	**MW-1**	EPA 8260B	510656		
10411602002	**MW-2**	EPA 8260B	510656		
10411602003	**MW-3**	EPA 8260B	510656		
10411602004	**MW-4**	EPA 8260B	510656		
10411602005	**MW-5**	EPA 8260B	510656		
10411602006	**MW-6**	EPA 8260B	510656		
10411602007	**MW-7**	EPA 8260B	510656		
10411602008	**MW-8**	EPA 8260B	510656		
10411602009	**TB**	EPA 8260B	510656		

10411602

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: Former ARCO 5300 **Req Due Date (mm/dd/yy):** Standart TAT **Rush TAT:** Yes ___ No X

BP/ARC Facility No: Former ARCO Facility No. 5300 **Lab Work Order Number:**

Lab Name: Pace Analytical	BP/ARC Facility Address: 710 15th Street	Consultant/Contractor: Antea Group
Lab Address: 1700 Elm St. Minneapolis, MN 55414	City, State, ZIP Code: Longview, WA	Consultant/Contractor Project No:
Lab PM: Shawn Davis	Lead Regulatory Agency: Washington State Department of Ecology	Address: 4006 148th Ave NE, Redmond, WA 98052
Lab Phone: 612-607-6402	California Global ID No.: NA	Consultant/Contractor PM: Megan Richard
Lab Shipping Accnt:	Enfos Proposal No: 009V4-0004 / WR3137782	Phone: 425-498-7711
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: megan.richard@anteagroup.com
Other Info: Pace profile: 31367 #4	Stage: 40 Activity: 80	Invoice To: BP/ARC X Contractor ___
BP/ARC EBM: Chuck Carmel		
EBM Phone: (657) 529-4503		
EBM Email: charles.carmel@bp.com		

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix:	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$		Requested Analyses: BTEX 8260	MTBE	NWTPH-Gx	NWTPH-Dx	NWTPH-O	Pb-T by EPA 6010	Pb-D by EPA 6010 lab filter	EDB by EPA 8011	EDC by EPA 8260B		Comments
	MW-1	11/14/17	1300		x			8							x	x	x			x	x				001
	MW-2		1245		x			8							x	x	x			x	x				002
	MW-3		1515		x			8							x	x	x			x	x				003
	MW-4		1400		x			8							x	x	x			x	x				004
	MW-5		1335		x			8							x	x	x			x	x				005
	MW-6		1320		x			8							x	x	x			x	x				006
	MW-7		1425		x			8							x	x	x			x	x				007
	MW-8	↓	1450		x			8							x	x	x			x	x				008
	TB	11/14/17	—		x			6							x		x								009

Standard X w/ Access

Full Data Package ___

Sampler's Name: Missy Tracy	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Antea Group	M. Tracy / Antea	11/15/17	1000	PACE	11/17/17	0930
Shipment Method: FedEX Ship Date: 11/15/17						
Shipment Tracking No:						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 2.9 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Pace Analytical	Document Name: Sample Condition Upon Receipt Form - ESI	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: F-MN-L-210-rev.23	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP Antea

Project #: WO#: 10411602

10411602

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 7707 5721 0206

Optional: Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.3 **Cooler Temp Corrected (°C):** 2.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C **Correction Factor:** -0.4 **Date and Initials of Person Examining Contents:** BC 11-17-17

USDA Regulated Soil (☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☐ Yes	☑ No		7.
Sufficient Volume (triple volume provided for MS/MSD)?	☑ Yes	☐ No		8.
Correct Containers Used? -Pace Containers Used?	☑ Yes ☑ Yes	☐ No ☐ No		9.
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☑ No	☐ N/A	11. Note if sediment is visible in the dissolved container. Lab filter
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☑ Yes	☐ No	☐ N/A	13. ☑ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, NaOH>9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water) and Dioxin. Per method, VOA pH is checked after analysis	☑ Yes	☐ No	☐ N/A	Sample # 1-8, 11
	☑ Yes	☐ No	☐ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☑ Yes	☐ No	☐ N/A	14. see exceptions
3 Trip Blanks Present?	☑ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased): 136913	☑ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Missy Tracy (email) Date/Time: 11/17/17

Comments/Resolution:

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: 1530 Temp: 3.3	Corrected Temp: 2.9	Vials had headspace
Time: 1540 put in cooler		
Time: Temp:	Corrected Temp:	

Project Manager Review: Shawn Davis **Date:** 11/17/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 06Nov2017 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.00**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace > 6mm	Headspace < 6mm	No Headspace	Total Vials
MW-3	5	1	~~0~~	6
MW-4	1	~~0~~	5	6
MW-5	5	1	~~0~~	6
MW-7	~~0~~	2	4	6
MW-8	4	~~0~~	2	6
TB	4	~~0~~	~~0~~	4