



**PDC Energy, Inc.**  
**Third Quarter 2016 Groundwater Monitoring Summary**

October 25, 2016

Dechant 1-31A Tank Battery  
SWSW Section 31 T3N R64W  
Weld County, API # 05-123-11685  
Facility ID # 444062  
Remediation # 9365

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Dechant 1-31A tank battery. On September 14, 2016, groundwater sampling was conducted at fourteen monitoring well locations (MW02R, MW03R, MW05R, MW07, MW10R, MW13, MW17R, MW18 - MW24). Monitoring well MW17 was replaced by MW17R in July 2016, subsequent to the second quarter 2016 groundwater sampling event. Twelve previously installed monitoring well locations (MW01 - MW06, MW08 - MW12, and MW14 - MW16) were destroyed in 2010 and 2011 and are no longer incorporated in the monitoring well network. Fourteen groundwater samples were submitted to Summit Scientific Laboratories for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B. Analytical results are summarized in Table 1 and the laboratory report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Analytical results from the third quarter 2016 sampling event indicated that benzene and total xylenes concentrations were at or above the COGCC regulatory standard in monitoring wells MW05-R, MW21 and MW23. BTEX concentrations were below COGCC regulatory standards at the remaining eleven well locations.

Tasman initiated mobile enhanced fluid recovery (EFR) and air sparge (AS) events at the site during the third quarter 2015. A summary of EFR/AS operational data is provided in Table 2. Mobile EFR/AS events were discontinued following the fourth quarter 2015. During the first quarter 2016, a soil vapor extraction (SVE) and air sparge (AS) system was installed on site in order to address remaining dissolved phase BTEX concentrations. The SVE/AS remediation well network is illustrated on Figure 2. Operation of the SVE/AS system commenced in February 2016. Volatile organic compound (VOC) samples are collected from the system effluent on a quarterly basis, in order to monitor performance and calculate the total contaminant mass removed. During the third quarter 2016, a total of 5.70 pounds of hydrocarbon mass was removed. Operation of the SVE/AS remediation system will continue through the fourth quarter 2016.

Fourth quarter 2016 groundwater sampling will be conducted during December 2016.

**TABLE 1**  
**DECHANT 1-31A TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water <sup>(2)</sup> (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW01	12/16/2009	<1.0	1.5	47	540	N/A
MW01	6/22/2010	Destroyed				
MW02	12/16/2009	<b>62</b>	<b>1,300</b>	610	<b>5,600</b>	N/A
MW02	6/22/2010	Destroyed				
MW02-R	1/25/2016	<1.0	<1.0	<1.0	<1.0	10.80
MW02-R	3/31/2016	<1.0	<1.0	<1.0	<1.0	9.98
MW02-R	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.72
MW02-R	9/14/2016	<1.0	<1.0	<1.0	<1.0	9.96
MW03	12/16/2009	<b>440</b>	<b>6,000</b>	<b>960</b>	<b>12,000</b>	N/A
MW03	6/22/2010	Destroyed				
MW03-R	1/25/2016	<1.0	<1.0	5.7	160	11.32
MW03-R	3/31/2016	<1.0	<1.0	<1.0	<1.0	10.12
MW03-R	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.86
MW03-R	9/14/2016	<1.0	<1.0	1.1	1.3	10.13
MW04	12/16/2009	<1.0	13	240	<b>3,000</b>	N/A
MW04	6/22/2010	<1.0	<1.0	23	260	18.05
MW04	9/17/2010	<1.0	<1.0	9.5	81	17.41
MW04	12/9/2010	<1.0	<1.0	1.4	6.7	16.88
MW04	3/10/2011	Destroyed				
MW05	12/16/2009	<b>140</b>	<b>1,400</b>	<b>960</b>	<b>12,000</b>	N/A
MW05	6/22/2010	Destroyed				
MW05-R	1/25/2016	<1.0	<1.0	300	<b>14,000</b>	10.77
MW05-R	3/31/2016	<1.0	<1.0	560	530	9.86
MW05-R	6/30/2016	<1.0	<1.0	250	<b>12,000</b>	8.60
MW05-R	9/14/2016	<1.0	<1.0	530	<b>12,000</b>	9.85
MW07	12/16/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW07	6/22/2010	<1.0	<1.0	<1.0	<1.0	21.45
MW07	9/17/2010	<1.0	<1.0	<1.0	<1.0	20.83
MW07	12/9/2010	<1.0	<1.0	<1.0	<1.0	20.32
MW07	3/10/2011	<1.0	<1.0	<1.0	<1.0	20.10

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water <sup>(2)</sup> (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW07	6/8/2011	<1.0	<1.0	<1.0	<1.0	20.00
MW07	9/26/2011	<1.0	<1.0	<1.0	<1.0	19.71
MW07	12/29/2011	NS	NS	NS	NS	N/A
MW07	3/7/2012	<1.0	<1.0	<1.0	<1.0	19.39
MW07	6/26/2012	<1.0	<1.0	<1.0	<1.0	18.55
MW07	9/20/2012	<1.0	<1.0	<1.0	<1.0	18.89
MW07	12/12/2012	<1.0	<1.0	<1.0	<1.0	18.56
MW07	6/21/2013	<1.0	<1.0	<1.0	<1.0	18.50
MW07	9/23/2013	<1.0	<1.0	<1.0	<1.0	18.71
MW07	12/18/2013	<1.0	<1.0	<1.0	<1.0	18.48
MW07	3/31/2014	<1.0	<1.0	<1.0	<1.0	18.28
MW07	6/17/2014	<1.0	<1.0	<1.0	<1.0	17.20
MW07	9/17/2014	<1.0	<1.0	<1.0	<1.0	16.62
MW07	12/2/2014	<1.0	<1.0	<1.0	<1.0	16.02
MW07	3/16/2015	<1.0	<1.0	<1.0	<1.0	15.23
MW07	6/25/2015	<1.0	<1.0	<1.0	<1.0	13.84
MW07	9/25/2015	<1.0	<1.0	<1.0	<1.0	14.51
MW07	12/16/2015	<1.0	<1.0	<1.0	<1.0	14.05
MW07	3/31/2016	<1.0	<1.0	<1.0	6.1	12.87
MW07	6/30/2016	<1.0	<1.0	<1.0	<1.0	11.56
MW07	9/14/2016	<1.0	<1.0	<1.0	<1.0	12.84
MW08	12/16/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW08	6/22/2010	Destroyed				
MW09	12/16/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW09	6/22/2010	<1.0	<1.0	<1.0	<1.0	17.62
MW09	9/17/2010	<1.0	<1.0	<1.0	<1.0	17.03
MW09	12/9/2010	<1.0	<1.0	<1.0	<1.0	16.51
MW09	3/10/2011	<1.0	<1.0	<1.0	<1.0	16.32
MW09	6/8/2011	<1.0	<1.0	<1.0	<1.0	15.15
MW09	9/26/2011	<1.0	<1.0	<1.0	<1.0	15.93
MW09	12/29/2011	<1.0	<1.0	<1.0	<1.0	15.65
MW09	3/7/2012	<1.0	<1.0	<1.0	<1.0	15.59
MW09	6/26/2012	<1.0	<1.0	<1.0	<1.0	14.73

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water <sup>(2)</sup> (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW09	9/20/2012	NS	NS	NS	NS	N/A
MW09	12/12/2012	<1.0	<1.0	<1.0	<1.0	14.83
MW09	6/21/2013	Destroyed				
MW10	12/16/2009	<b>310</b>	<b>1,000</b>	690	<b>8,700</b>	N/A
MW10	6/22/2010	<b>8.4</b>	5.1	30	720	17.95
MW10	9/17/2010	<b>55</b>	<1.0	45	280	17.36
MW10	12/9/2010	<b>34</b>	<1.0	<b>780</b>	<b>3,700</b>	16.83
MW10	3/10/2011	<b>12</b>	<1.0	<b>870</b>	<b>2,600</b>	16.60
MW10	6/8/2011	<1.0	<1.0	28	140	16.70
MW10	9/26/2011	4.3	5.2	220	<b>3,100</b>	16.29
MW10	12/29/2011	NS	NS	NS	NS	N/A
MW10	3/7/2012	<b>27</b>	12	<b>700</b>	<b>5,300</b>	15.89
MW10	6/26/2012	Destroyed				
MW10-R	8/17/2012	<b>5.8</b>	2.3	460	<b>10,000</b>	N/A
MW10-R	9/20/2012	<b>5.4</b>	<1.0	440	7.5	17.95
MW10-R	12/12/2012	<b>5.8</b>	<1.0	350	<b>7,000</b>	17.88
MW10-R	6/21/2013	<b>5.5</b>	<1.0	330	<b>7,200</b>	17.25
MW10-R	9/23/2013	4.4	<1.0	350	<b>7,500</b>	17.23
MW10-R	12/18/2013	3.4	<1.0	73	<b>6,600</b>	15.69
MW10-R	3/31/2014	<b>8.8</b>	<1.0	570	640	15.52
MW10-R	6/17/2014	4.2	<1.0	100	<b>7,700</b>	14.41
MW10-R	9/17/2014	<1.0	<1.0	450	<b>6,200</b>	13.90
MW10-R	12/2/2014	1.7	<1.0	<b>1,000</b>	<b>13,000</b>	13.23
MW10-R	3/16/2015	<1.0	<1.0	550	<b>7,900</b>	12.46
MW10-R	6/25/2015	<1.0	<1.0	230	<b>2,700</b>	11.09
MW10-R	9/25/2015	<1.0	<1.0	59	240	11.86
MW10-R	12/16/2015	<1.0	<1.0	130	530	11.41
MW10-R	3/31/2016	<1.0	<1.0	<1.0	3.0	10.22
MW10-R	6/30/2016	<1.0	<1.0	170	<b>1,900</b>	9.11
MW10-R	9/14/2016	<1.0	<1.0	28	140	10.35
MW11	1/18/2010	1.0	<1.0	4.9	<1.0	N/A
MW11	6/22/2010	<1.0	<1.0	<1.0	<1.0	18.70

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<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW11	9/17/2010	<1.0	<1.0	<1.0	<1.0	18.16
MW11	12/9/2010	<1.0	<1.0	<1.0	<1.0	17.55
MW11	3/10/2011	Destroyed				
MW12	1/18/2010	<1.0	<1.0	<1.0	<1.0	N/A
MW12	6/22/2010	<1.0	<1.0	<1.0	<1.0	18.85
MW12	9/17/2010	<1.0	<1.0	<1.0	<1.0	18.25
MW12	12/9/2010	<1.0	<1.0	<1.0	<1.0	17.69
MW12	3/10/2011	<1.0	<1.0	<1.0	<1.0	17.42
MW12	6/8/2011	<1.0	<1.0	<1.0	<1.0	17.33
MW12	9/26/2011	<1.0	<1.0	<1.0	<1.0	17.16
MW12	12/29/2011	NS	NS	NS	NS	N/A
MW12	3/7/2012	<1.0	<1.0	<1.0	<1.0	16.74
MW12	6/26/2012	Destroyed				
MW13	1/18/2010	35	<1.0	230	73	N/A
MW13	6/22/2010	5.1	<1.0	290	<1.0	18.56
MW13	9/17/2010	13	<1.0	160	<1.0	17.95
MW13	12/9/2010	4.4	<1.0	160	<1.0	17.42
MW13	3/10/2011	<1.0	<1.0	23	3.4	16.15
MW13	6/8/2011	<1.0	<1.0	110	<1.0	17.04
MW13	9/26/2011	2.1	<1.0	190	2.3	16.84
MW13	12/29/2011	<1.0	<1.0	190	<1.0	16.51
MW13	3/7/2012	<1.0	<1.0	150	<1.0	16.45
MW13	6/26/2012	<1.0	<1.0	150	13	15.64
MW13	9/20/2012	NS	NS	NS	NS	N/A
MW13	12/12/2012	<1.0	<1.0	110	<1.0	15.70
MW13	6/21/2013	2.2	<1.0	110	160	15.61
MW13	9/23/2013	7.2	<1.0	290	1,100	15.75
MW13	12/18/2013	1.6	<1.0	2.7	94	15.56
MW13	3/31/2014	<1.0	<1.0	<1.0	4.8	15.26
MW13	6/17/2014	3.5	<1.0	270	850	14.24
MW13	9/17/2014	<1.0	<1.0	190	120	13.43
MW13	12/2/2014	2.8	<1.0	610	280	13.09
MW13	3/16/2015	2.2	<1.0	530	210	12.31

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water <sup>(2)</sup> (feet)	
COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400		
MW13	6/25/2015	1.8	<1.0	260	310	10.91	
MW13	9/25/2015	2.0	<1.0	570	710	11.61	
MW13	12/16/2015	1.5	1.3	650	1,400	13.14	
MW13	3/31/2016	1.6	1.8	400	1,200	10.33	
MW13	6/30/2016	1.5	1.3	360	1,400	9.12	
MW13	9/14/2016	1.0	<1.0	460	900	9.55	
MW14	1/18/2010	<1.0	<1.0	<1.0	<1.0	N/A	
MW14	6/22/2010	<1.0	<1.0	<1.0	<1.0	19.06	
MW14	9/17/2010	3.9	<1.0	180	25	18.49	
MW14	12/9/2010	<1.0	<1.0	3.8	<1.0	17.94	
MW14	3/10/2011	1.2	<1.0	8.8	<1.0	17.64	
MW14	6/8/2011	<1.0	<1.0	1.3	<1.0	17.69	
MW14	9/26/2011	2.8	<1.0	150	3.0	17.37	
MW14	12/29/2011	<1.0	<1.0	26	<1.0	17.03	
MW14	3/7/2012	<1.0	<1.0	<1.0	<1.0	16.95	
MW14	6/26/2012	Destroyed					
MW15	2/10/2010	240	<1.0	340	1,600	N/A	
MW15	6/22/2010	<1.0	<1.0	<1.0	<1.0	17.04	
MW15	9/17/2010	Destroyed					
MW16	2/10/2010	44	<1.0	130	450	N/A	
MW16	6/22/2010	<1.0	<1.0	4.4	12	16.72	
MW16	9/17/2010	Destroyed					
MW17	3/31/2014	<1.0	<1.0	<1.0	<1.0	13.68	
MW17	6/17/2014	<1.0	<1.0	<1.0	<1.0	12.58	
MW17	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.04	
MW17	12/2/2014	<1.0	<1.0	<1.0	6.6	11.42	
MW17	3/16/2015	<1.0	<1.0	1.5	2.0	10.61	
MW17	6/25/2015	<1.0	<1.0	<1.0	<1.0	9.23	
MW17	9/25/2015	<1.0	<1.0	<1.0	<1.0	9.92	
MW17	12/16/2015	<1.0	<1.0	<1.0	<1.0	9.48	
MW17 <sup>(2)</sup>	3/31/2016	NS	NS	NS	NS	NM	
MW17	6/30/2016	Destroyed					NM

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<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW17R	9/14/2016	<1.0	<1.0	<1.0	<1.0	8.58
MW18	3/31/2014	<1.0	<1.0	<1.0	<1.0	14.00
MW18	6/17/2014	<1.0	<1.0	<1.0	<1.0	12.92
MW18	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.40
MW18	12/2/2014	<1.0	<1.0	<1.0	<1.0	11.74
MW18	3/16/2015	<1.0	<1.0	<1.0	<1.0	10.95
MW18	6/25/2015	<1.0	<1.0	<1.0	<1.0	9.55
MW18	9/25/2015	<1.0	<1.0	<1.0	<1.0	10.35
MW18	12/16/2015	<1.0	<1.0	<1.0	<1.0	9.91
MW18	3/31/2016	<1.0	<1.0	<1.0	<1.0	8.66
MW18	6/30/2016	<1.0	<1.0	<1.0	<1.0	7.61
MW18	9/14/2016	<1.0	<1.0	<1.0	<1.0	8.96
MW19	3/31/2014	<1.0	<1.0	<1.0	<1.0	14.37
MW19	6/17/2014	<1.0	<1.0	<1.0	<1.0	13.29
MW19	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.75
MW19	12/2/2014	<1.0	<1.0	<1.0	<1.0	12.10
MW19	3/16/2015	<1.0	<1.0	<1.0	<1.0	11.31
MW19	6/25/2015	<1.0	<1.0	<1.0	<1.0	9.93
MW19	9/25/2015	<1.0	<1.0	<1.0	<1.0	10.63
MW19	12/16/2015	<1.0	<1.0	<1.0	<1.0	10.19
MW19	3/31/2016	<1.0	<1.0	<1.0	<1.0	8.94
MW19	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.28
MW19	9/14/2016	<1.0	<1.0	<1.0	<1.0	9.59
MW20	3/31/2014	<1.0	<1.0	<1.0	46	14.85
MW20	6/17/2014	<1.0	<1.0	<1.0	2.5	13.73
MW20	9/17/2014	<1.0	<1.0	<1.0	<1.0	13.21
MW20	12/2/2014	<1.0	<1.0	<1.0	<1.0	12.55
MW20	3/16/2015	<1.0	<1.0	<1.0	<1.0	11.77
MW20	6/25/2015	<1.0	<1.0	<1.0	<1.0	10.39
MW20	9/25/2015	<1.0	<1.0	<1.0	<1.0	11.16
MW20	12/16/2015	<1.0	<1.0	<1.0	<1.0	10.73
MW20	3/31/2016	<1.0	<1.0	<1.0	<1.0	9.97

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<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW20	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.72
MW20	9/14/2016	<1.0	<1.0	<1.0	<1.0	9.96
MW21	3/31/2014	<1.0	<1.0	250	1,000	14.56
MW21	6/17/2014	<1.0	<1.0	470	<b>3,200</b>	13.47
MW21	9/17/2014	<1.0	<1.0	380	<b>3,400</b>	12.97
MW21	12/2/2014	2.5	2.2	<b>1,400</b>	<b>18,000</b>	12.31
MW21	3/16/2015	3.3	3.7	<b>1,700</b>	<b>26,000</b>	11.52
MW21	6/25/2015	4.5	4.9	<b>1,300</b>	<b>21,000</b>	10.14
MW21	9/25/2015	2.6	3.6	<b>840</b>	<b>14,000</b>	10.92
MW21	12/16/2015	1.6	2.6	590	<b>8,400</b>	10.49
MW21	3/31/2016	2.7	3.0	<b>860</b>	1,100	9.91
MW21	6/30/2016	1.8	2.7	630	<b>8,900</b>	8.66
MW21	9/14/2016	2.8	2.5	<b>1,000</b>	<b>11,000</b>	9.91
MW22	3/31/2014	<1.0	<1.0	<1.0	<1.0	13.92
MW22	6/17/2014	<1.0	<1.0	<1.0	<1.0	12.82
MW22	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.30
MW22	12/2/2014	<1.0	<1.0	<1.0	<1.0	11.62
MW22	3/16/2015	<1.0	<1.0	<1.0	12	10.83
MW22	6/25/2015	<1.0	<1.0	<1.0	12	9.46
MW22	9/25/2015	<1.0	<1.0	<1.0	<1.0	10.16
MW22	12/16/2015	<1.0	<1.0	<1.0	3.6	9.73
MW22	3/31/2016	<1.0	<1.0	<1.0	4.2	8.45
MW22	6/30/2016	<1.0	<1.0	<1.0	<1.0	7.14
MW22	9/14/2016	<1.0	<1.0	<1.0	<1.0	8.44
MW23	1/25/2016	<b>18</b>	7.9	<b>1,300</b>	<b>13,000</b>	11.03
MW23	3/31/2016	<b>39</b>	15	<b>1,300</b>	650	10.20
MW23	6/30/2016	1.0	1.6	200	<b>3,700</b>	9.00
MW23	9/14/2016	<b>8.9</b>	<1.0	390	<b>4,500</b>	10.22
MW24	1/25/2016	<1.0	<1.0	<1.0	2.5	11.19
MW24	3/31/2016	<1.0	<1.0	<1.0	7.0	10.30
MW24	6/30/2016	<1.0	<1.0	<1.0	<1.0	9.10
MW24	9/14/2016	<1.0	<1.0	<1.0	<1.0	10.30



**TABLE 1**  
**DECHANT 1-31A TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water <sup>(2)</sup> (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	

**Notes:**

COGCC = Colorado Oil and Gas Conservation Commission

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

2. Depth to water measured from top of well casing.

3. Well inaccessible due to standing water during first quarter 2016 sampling event.

µg/L = Micrograms per liter

(<) = Analytical result is less than the indicated laboratory reporting limit.

NS = Not sampled, well inaccessible

NM = Not measured

N/A = LT Environmental, Inc. field data not available

**BOLD** = Analytical result is not in compliance with COGCC groundwater standards.

**TABLE 2**  
**DECHANT 1-31A TANK BATTERY**  
**EFR / AS OPERATIONAL SUMMARY TABLE**

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)
Third Quarter 2015					
7/8/2015	MW10R, MW18, MW20, MW21	6	15	MW10R, MW21	20
7/22/2015		6	0		20
8/5/2015		6	0		20
8/19/2015		6	0		20
9/2/2015		6	0		20
9/16/2015		6	60		20
9/28/2015		6	0		20
Quarterly Totals		42	75		-
Fourth Quarter 2015					
10/14/2015	MW10R, MW18, MW20, MW21	6	10	MW10R, MW21	20
10/28/2015		6	0		20
11/14/2015	MW10R, MW18, MW21	6	4		20
11/25/2015	MW10R, MW18, MW20, MW21	6	15		20
12/10/2015		6	60		20
12/22/2015		6	10		20
Quarterly Totals		36	99		-

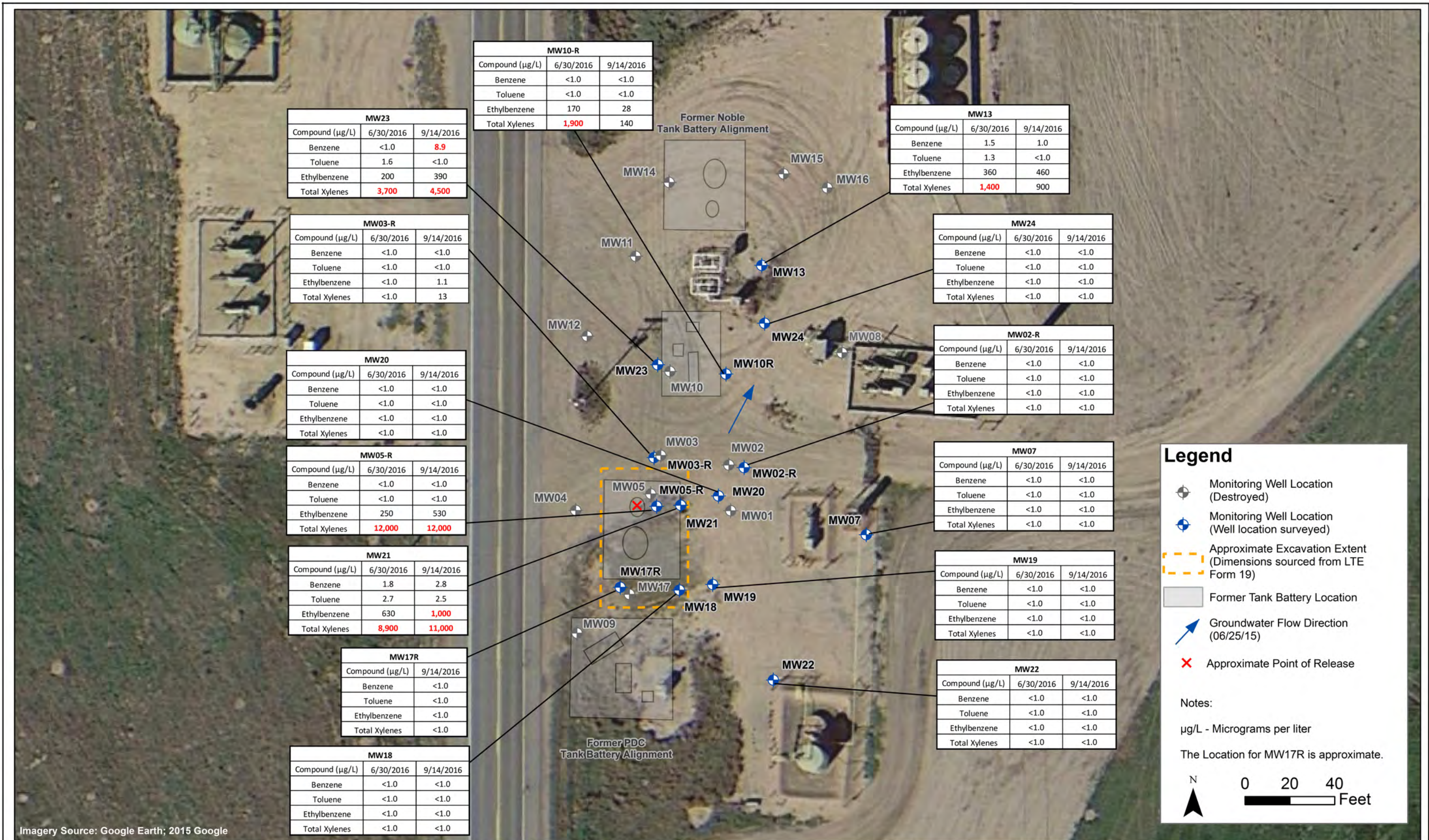
**Notes:**

EFR = Enhanced fluid recovery

AS = Air sparge

psi = Pounds per square inch









DATE:	January 2016
DESIGNED BY:	C. Wasko
DRAWN BY:	D. Arnold



Tasman Geosciences, Inc.  
6899 Pecos Street - Unit C  
Denver, CO 80221

**PDC Energy - DJ Basin**  
**Dechant 1-31 A**  
SWSW Section 31, Township 3 North, Range 64 West  
Weld County, Colorado

Remediation System  
Layout Map

Figure  
2

## **ATTACHMENT A**

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 22, 2016

Mark Longhurst  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Dechant 1-31A

Enclosed are the results of analyses for samples received by Summit Scientific on 09/15/16 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury  
President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02-R	1609093-01	Water	09/14/16 13:21	09/15/16 16:30
MW03-R	1609093-02	Water	09/14/16 13:03	09/15/16 16:30
MW05-R	1609093-03	Water	09/14/16 12:46	09/15/16 16:30
MW07	1609093-04	Water	09/14/16 13:49	09/15/16 16:30
MW10-R	1609093-05	Water	09/14/16 13:06	09/15/16 16:30
MW13	1609093-06	Water	09/14/16 12:26	09/15/16 16:30
MW17-R	1609093-07	Water	09/14/16 13:30	09/15/16 16:30
MW18	1609093-08	Water	09/14/16 13:50	09/15/16 16:30
MW19	1609093-09	Water	09/14/16 14:15	09/15/16 16:30
MW20	1609093-10	Water	09/14/16 13:38	09/15/16 16:30
MW21	1609093-11	Water	09/14/16 12:31	09/15/16 16:30
MW22	1609093-12	Water	09/14/16 14:18	09/15/16 16:30
MW23	1609093-13	Water	09/14/16 13:59	09/15/16 16:30
MW24	1609093-14	Water	09/14/16 12:43	09/15/16 16:30

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Page 2 of 21







PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
09/22/16 09:05

#### Sample Receipt Checklist

S2 Work Order: 1609093

Client: PDC Energy

Client Project ID: Dechant 1-31A

Shipped Via: PIU

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: \_\_\_\_\_

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	0.9				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	✓			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	✗	✓		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	✓			
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			✓	
Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

9/15/16 1700  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW02-R**  
**1609093-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	45-146		"	"	"	"	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW03-R**  
**1609093-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>1.1</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>13</b>	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.9 %	45-146		"	"	"	"	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW05-R**  
**1609093-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>530</b>	100	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>12000</b>	100	"	"	"	"	"	"	

Date Sampled: **09/14/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		100 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.4 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		96.5 %	45-146		"	"	"	"	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW07**  
**1609093-04 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1609119	09/16/16	09/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW10-R**  
**1609093-05 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>28</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>140</b>	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>101 %</i>	<i>37-154</i>		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		<i>96.8 %</i>	<i>45-149</i>		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>98.0 %</i>	<i>45-146</i>		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW13**  
**1609093-06 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>1.0</b>	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>460</b>	10	"	10	"	"	"	"	
<b>Xylenes (total)</b>	<b>900</b>	10	"	"	"	"	"	"	

Date Sampled: **09/14/16 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		103 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.9 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		93.2 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW17-R**  
**1609093-07 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW18**  
**1609093-08 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW19**  
**1609093-09 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 14:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **09/14/16 14:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		112 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		96.8 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %		45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW20**  
**1609093-10 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		110 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW21**  
**1609093-11 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>2.8</b>	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
<b>Toluene</b>	<b>2.5</b>	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>1000</b>	100	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>11000</b>	100	"	"	"	"	"	"	

Date Sampled: **09/14/16 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		101 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		94.4 %	45-146		"	"	"	"	

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW22**  
**1609093-12 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 14:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **09/14/16 14:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		109 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		96.0 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %		45-146		"	"	"	"	

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW23**  
**1609093-13 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 13:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>8.9</b>	1.0	ug/l	1	1609119	09/17/16	09/17/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>390</b>	10	"	10	"	"	"	"	
<b>Xylenes (total)</b>	<b>4500</b>	10	"	"	"	"	"	"	

Date Sampled: **09/14/16 13:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		104 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.2 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.0 %	45-146		"	"	"	"	

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**MW24**  
**1609093-14 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/14/16 12:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609119	09/21/16	09/21/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/14/16 12:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

#### Batch 1609119 - EPA 5030 Water MS

##### Blank (1609119-BLK1)

Prepared & Analyzed: 09/16/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3	101	37-154				
Surrogate: Toluene-d8	12.8		"	13.3	96.2	45-149				
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3	102	45-146				

##### LCS (1609119-BS1)

Prepared & Analyzed: 09/16/16

Benzene	40.3	1.0	ug/l			51-132				
Toluene	38.6	1.0	"			51-138				
Ethylbenzene	38.3	1.0	"			58-146				
m,p-Xylene	72.2	2.0	"			57-144				
o-Xylene	37.9	1.0	"			53-146				
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3	102	37-154				
Surrogate: Toluene-d8	14.5		"	13.3	109	45-149				
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3	101	45-146				

##### Matrix Spike (1609119-MS1)

Source: 1609093-04

Prepared & Analyzed: 09/16/16

Benzene	43.1	1.0	ug/l		ND	34-141				
Toluene	41.6	1.0	"		ND	27-151				
Ethylbenzene	43.0	1.0	"		ND	29-160				
m,p-Xylene	81.3	2.0	"		ND	20-166				
o-Xylene	42.5	1.0	"		ND	33-159				
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3	110	37-154				
Surrogate: Toluene-d8	13.6		"	13.3	102	45-149				
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3	96.9	45-146				

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 1609119 - EPA 5030 Water MS**

Matrix Spike Dup (1609119-MSD1)			Source: 1609093-04		Prepared & Analyzed: 09/16/16					
Benzene	44.5	1.0	ug/l		ND	34-141	3.19	32		
Toluene	43.5	1.0	"		ND	27-151	4.37	25		
Ethylbenzene	45.6	1.0	"		ND	29-160	5.84	50		
m,p-Xylene	86.8	2.0	"		ND	20-166	6.47	36		
o-Xylene	45.0	1.0	"		ND	33-159	5.66	26		
Surrogate: 1,2-Dichloroethane-d4	15.0		"	13.3	112	37-154				
Surrogate: Toluene-d8	13.6		"	13.3	102	45-149				
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3	96.2	45-146				

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Dechant 1-31A  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/16 09:05

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

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A handwritten signature in black ink, appearing to be 'MSM'.