

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

July 9, 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 June 30, 2016 groundwater sampling was conducted at thirteen monitoring well locations (MW02R, MW03R, MW05R, MW07, MW10R, MW13, MW18-MW24). Monitoring well MW17 was found to be destroyed and could not be sampled. 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.

Groundwater samples were submitted for laboratory 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 second quarter 2016 site-wide sampling event indicated that total xylenes concentrations were at or above the COGCC regulatory standard in monitoring wells MW5R, MW10R, MW13, MW21 and MW23. BTEX concentrations were below COGCC regulatory standards at the remaining eight monitoring locations.

Tasman initiated 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. 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 monthly basis, in order to monitor performance and calculate the total contaminant mass removed. During the second quarter 2016, a total of 3.07 pounds of hydrocarbon mass was removed. Operation of the SVE/AS remediation system will continue through the third quarter 2016.

Third quarter 2016 groundwater sampling will be conducted during September 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)
COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400	
MW01	12/16/2009	<1.0	1.5	47	540	N/A
MW01	6/22/2010	Destroyed				
MW02	12/16/2009	62	1,300	610	5,600	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
MW03	12/16/2009	440	6,000	960	12,000	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
MW04	12/16/2009	<1.0	13	240	3,000	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	140	1,400	960	12,000	N/A
MW05	6/22/2010	Destroyed				
MW05-R	1/25/2016	<1.0	<1.0	300	14,000	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	12,000	8.60
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
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

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**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>		
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	
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	
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					

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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	
MW10	12/16/2009	310	1,000	690	8,700	N/A
MW10	6/22/2010	8.4	5.1	30	720	17.95
MW10	9/17/2010	55	<1.0	45	280	17.36
MW10	12/9/2010	34	<1.0	780	3,700	16.83
MW10	3/10/2011	12	<1.0	870	2,600	16.60
MW10	6/8/2011	<1.0	<1.0	28	140	16.70
MW10	9/26/2011	4.3	5.2	220	3,100	16.29
MW10	12/29/2011	NS	NS	NS	NS	N/A
MW10	3/7/2012	27	12	700	5,300	15.89
MW10	6/26/2012	Destroyed				
MW10-R	8/17/2012	5.8	2.3	460	10,000	N/A
MW10-R	9/20/2012	5.4	<1.0	440	7.5	17.95
MW10-R	12/12/2012	5.8	<1.0	350	7,000	17.88
MW10-R	6/21/2013	5.5	<1.0	330	7,200	17.25
MW10-R	9/23/2013	4.4	<1.0	350	7,500	17.23
MW10-R	12/18/2013	3.4	<1.0	73	6,600	15.69
MW10-R	3/31/2014	8.8	<1.0	570	640	15.52
MW10-R	6/17/2014	4.2	<1.0	100	7,700	14.41
MW10-R	9/17/2014	<1.0	<1.0	450	6,200	13.90
MW10-R	12/2/2014	1.7	<1.0	1,000	13,000	13.23
MW10-R	3/16/2015	<1.0	<1.0	550	7,900	12.46
MW10-R	6/25/2015	<1.0	<1.0	230	2,700	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	1,900	9.11
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
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

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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	
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
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

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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	6/30/2016	1.5	1.3	360	1,400	9.12
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				
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

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**DECHANT 1-31A TANK BATTERY**  
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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>	
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
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
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
MW20	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.72
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

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COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400	
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
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
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
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

**Notes:**

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective March 16, 2016.
2. Depth to water measured from top of well casing.
3. Well inaccessible due to standing water during first quarter 2016 sampling event.

COGCC = Colorado Oil and Gas Conservation Commission

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**

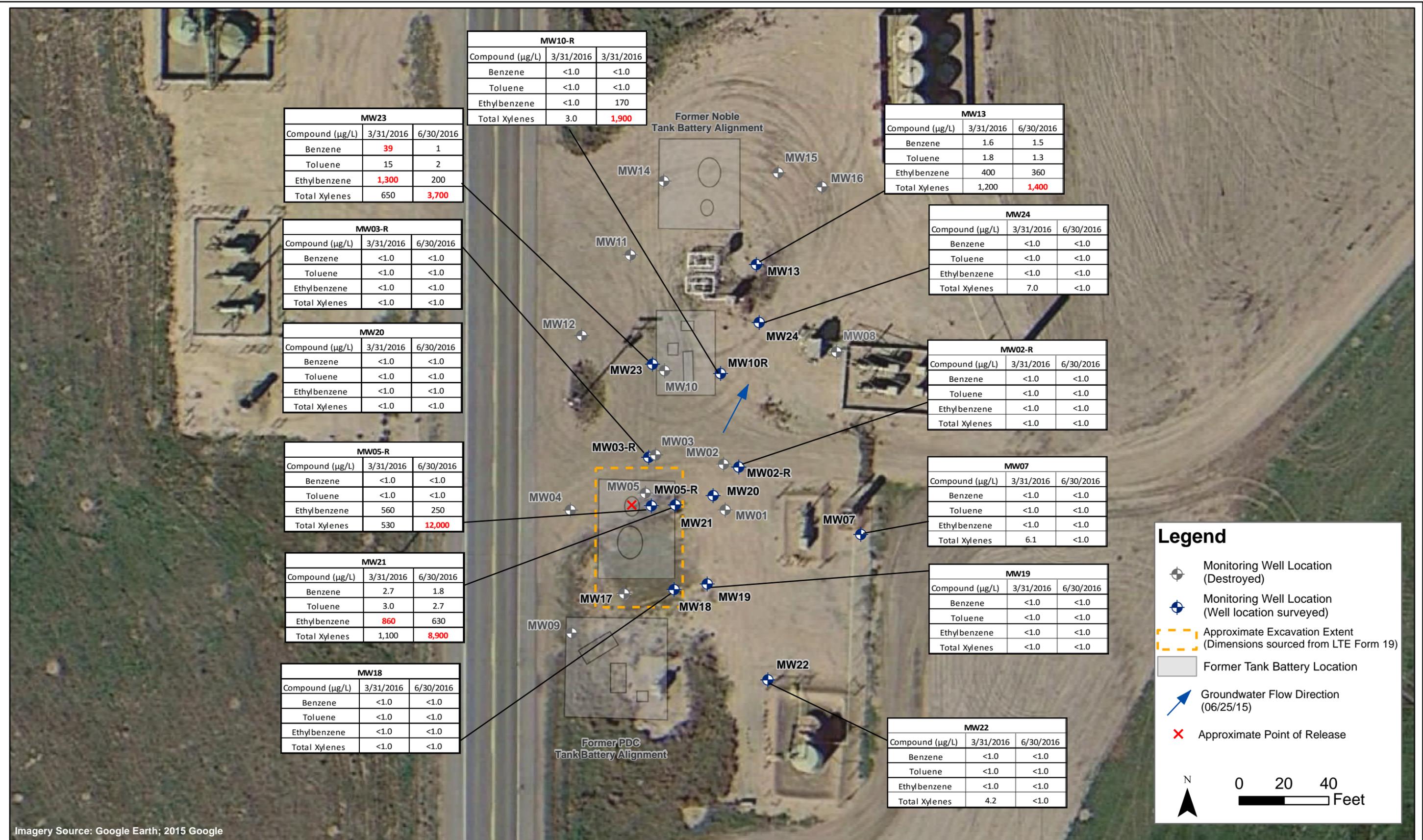
Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)	
<b>Third Quarter 2015</b>						
7/8/2015	MW10R, MW18, MW20, MW21	6	15	MW10R, MW21	20	
7/22/2015		6	0		20	
8/5/2015		6	0		20	
8/19/2015		6	0		20	
9/2/2015		6	0		20	
9/16/2015		6	60		20	
9/28/2015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

**Notes:**

EFR = Enhanced fluid recovery

AS = Air sparge

psi = Pounds per square inch



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



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

Groundwater Analytical Results  
 Map

Figure  
 1



Imagery Source: Google Earth; 2015 Google

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


**TASMAN**  
 GEOSCIENCES

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

July 10, 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 06/30/16 19:41. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



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:**  
07/10/16 19:52

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02R	1607006-01	Water	06/30/16 10:55	06/30/16 19:41
MW03R	1607006-02	Water	06/30/16 11:15	06/30/16 19:41
MW05R	1607006-03	Water	06/30/16 12:20	06/30/16 19:41
MW07	1607006-04	Water	06/30/16 10:45	06/30/16 19:41
MW10R	1607006-05	Water	06/30/16 11:20	06/30/16 19:41
MW13	1607006-06	Water	06/30/16 11:40	06/30/16 19:41
MW18	1607006-07	Water	06/30/16 10:20	06/30/16 19:41
MW19	1607006-08	Water	06/30/16 10:40	06/30/16 19:41
MW20	1607006-09	Water	06/30/16 11:00	06/30/16 19:41
MW21	1607006-10	Water	06/30/16 12:05	06/30/16 19:41
MW22	1607006-11	Water	06/30/16 10:05	06/30/16 19:41
MW23	1607006-12	Water	06/30/16 12:10	06/30/16 19:41
MW24	1607006-13	Water	06/30/16 11:23	06/30/16 19:41

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:  
07/10/16 19:52

# Summit Scientific

16070061

S<sub>2</sub>

741 Corporate Circle, Suite J • Golden, Colorado 80401  
303-277-9310 • 303-374-5933

Page 1 of 2

Client: PDC / Tasman Geosciences Project Manager: Mark Longhurst  
Address: 6899 Pecos St, Unit C E-Mail:  
City/State/Zip: Denver, CO 80221  
Phone: Fax: Project Name: Dechant 1-31A  
Sampler Name: Mitch Weller / Ryan Bruner Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions	
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	STEX	ST60			
1	MW 02R	6-30-16	1055	3	X					X							
2	MW 03-R		1115														
3	MW 05-R		1220														
4	MW 07		1045														
5	MW 18-R		1120														
6	MW 13		1140														
7	MW 18		1020														
8	MW 19		1040														
9	MW 20		1100														
10	MW 21		1205														

Relinquished by: Mitch Weller Date/Time: 6-30-16 1941 Received by: [Signature] Date/Time: 6-30-16 1941  
 Turn Around Time (Check):  
 Same Day  72 hours   
 24 hours  Standard   
 48 hours   
 Sample Integrity:  
 Temperature Upon Receipt: 4.5  
 Intact:  Yes  No

www.s2scientific.com



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

Project: Dechant 1-31A

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
07/10/16 19:52

# Summit Scientific

S<sub>2</sub>

16070062

741 Corporate Circle, Suite J • Golden, Colorado 80401  
303-277-9310 • 303-374-5933

Page 2 of 2

Client: PDC / Tasman Geosciences Project Manager: Mark Longhurst  
 Address: 6899 Pecos St, Unit C E-Mail:  
 City/State/Zip: Denver, CO 80221  
 Phone: Fax: Project Name: Dechant 1-31A  
 Sampler Name: Mitch Weller / Ryan Bruner Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative					Matrix			Analysis Requested				Special Instructions	
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	TEX	60				
1	MW 22	6-30-16	1005	3	X													
2	MW 23	↓	1210	↓														
3	MW 24	↓	1123	↓														
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: Mitchell Weller Date/Time: 6-30-16 1941 Received by: OGS Date/Time: 6-30-16 1941  
 Relinquished by: Date/Time: Received by: Date/Time:  
 Relinquished by: Date/Time: Received by: Date/Time:

Turn Around Time (Check)  
 Same Day  72 hours   
 24 hours  Standard   
 48 hours   
 Sample integrity:  
 Temperature Upon Receipt: 4.6  
 Intact:  Yes  No

www.s2scientific.com



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

Project: Dechant 1-31A

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
07/10/16 19:52

Sample Receipt Checklist

S2 Work Order: 1607006

Client: PDC

Client Project ID: Dechant 1-31A

Shipped Via: H/D  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

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

Cooler ID				
Temp (°C)	<u>4.6</u>			

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> ?	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
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> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			HCC
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> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Paul Shrewsbury  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

6-30-16  
Date/Time

[Signature]



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

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

**Reported:**  
 07/10/16 19:52

**MW02R**  
**1607006-01 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>112 %</i>	<i>37-154</i>		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		<i>97.4 %</i>	<i>45-149</i>		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>98.0 %</i>	<i>45-146</i>		"	"	"	"	

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:**  
 07/10/16 19:52

**MW03R**  
**1607006-02 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		112 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.4 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.2 %	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:**  
 07/10/16 19:52

**MW05R**  
**1607006-03 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/08/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>250</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>12000</b>	100	"	100	"	"	"	"	

Date Sampled: **06/30/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		83.6 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		115 %	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:**  
 07/10/16 19:52

**MW07**  
**1607006-04 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		113 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.5 %	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:**  
 07/10/16 19:52

**MW10R**  
**1607006-05 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>170</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>1900</b>	25	"	25	"	"	"	"	

Date Sampled: **06/30/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		96.8 %	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:**  
 07/10/16 19:52

**MW13**  
**1607006-06 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>1.5</b>	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
<b>Toluene</b>	<b>1.3</b>	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>360</b>	10	"	10	"	"	"	"	
<b>Xylenes (total)</b>	<b>1400</b>	10	"	"	"	"	"	"	

Date Sampled: **06/30/16 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		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:**  
 07/10/16 19:52

**MW18**  
**1607006-07 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>114 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>95.7 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>98.0 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

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:**  
 07/10/16 19:52

**MW19**  
**1607006-08 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.2 %	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:**  
 07/10/16 19:52

**MW20**  
**1607006-09 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		113 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.5 %	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:**  
 07/10/16 19:52

**MW21**  
**1607006-10 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>1.8</b>	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
<b>Toluene</b>	<b>2.7</b>	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>630</b>	100	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>8900</b>	100	"	"	"	"	"	"	

Date Sampled: **06/30/16 12:05**

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>		98.3 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.0 %	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:**  
 07/10/16 19:52

**MW22**  
**1607006-11 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>113 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>95.6 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>99.2 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

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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:**  
 07/10/16 19:52

**MW23**  
**1607006-12 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>1.0</b>	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
<b>Toluene</b>	<b>1.6</b>	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>200</b>	100	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>3700</b>	100	"	"	"	"	"	"	

Date Sampled: **06/30/16 12:10**

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>		96.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.9 %	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:**  
 07/10/16 19:52

**MW24**  
**1607006-13 (Water)**

**Summit Scientific**

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

Date Sampled: **06/30/16 11:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607057	07/07/16	07/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/30/16 11:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>113 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>95.8 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>100 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

Summit Scientific

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PDC Energy  
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Denver CO, 80203

Project: Dechant 1-31A

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
07/10/16 19:52

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

#### Summit Scientific

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

#### Batch 1607057 - EPA 5030 Water MS

##### Blank (1607057-BLK1)

Prepared & Analyzed: 07/06/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		96.4	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.3	45-146			

##### LCS (1607057-BS1)

Prepared & Analyzed: 07/06/16

Benzene	39.3	1.0	ug/l	33.3		118	51-132			
Toluene	42.4	1.0	"	33.3		127	51-138			
Ethylbenzene	48.0	1.0	"	33.1		145	58-146			
m,p-Xylene	95.2	2.0	"	66.5		143	57-144			
o-Xylene	46.1	1.0	"	32.7		141	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		109	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.2	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	45-146			

##### Matrix Spike (1607057-MS1)

Source: 1607006-01

Prepared & Analyzed: 07/06/16

Benzene	39.9	1.0	ug/l	33.3	ND	120	34-141			
Toluene	42.7	1.0	"	33.3	ND	128	27-151			
Ethylbenzene	49.3	1.0	"	33.1	ND	149	29-160			
m,p-Xylene	98.7	2.0	"	66.5	ND	148	20-166			
o-Xylene	47.5	1.0	"	32.7	ND	145	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	45-149			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.5	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:**  
 07/10/16 19:52

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

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

**Batch 1607057 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1607057-MSD1)</b>	<b>Source: 1607006-01</b>			<b>Prepared &amp; Analyzed: 07/07/16</b>						
Benzene	39.8	1.0	ug/l	33.3	ND	120	34-141	0.0251	32	
Toluene	43.0	1.0	"	33.3	ND	129	27-151	0.654	25	
Ethylbenzene	49.8	1.0	"	33.1	ND	150	29-160	0.990	50	
m,p-Xylene	98.7	2.0	"	66.5	ND	148	20-166	0.00	36	
o-Xylene	48.1	1.0	"	32.7	ND	147	33-159	1.19	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.6</i>		<i>"</i>	<i>13.3</i>		<i>110</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.5</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.4</i>	<i>45-146</i>			

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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:**  
07/10/16 19:52

### 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