

PDC Energy, Inc.
First Quarter 2016 Groundwater Monitoring Summary

April 14, 2016

Dechant 1-31A Tank Battery
SWSW Section 31 T3N R64W
Weld County, API # 05-123-11685
Spill Tracking # 1631206
Remediation # 9365

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Dechant 1-31A tank battery. Between January 20 and January 22, 2016, five additional monitoring and remediation wells (MW02-R, MW03-R, MW05-R, MW23, and MW24) were installed at the site. On January 25, 2016, baseline groundwater sampling was conducted at these five new monitoring well locations. On March 31, 2016, a site-wide groundwater monitoring event was conducted at thirteen of the fourteen active monitoring wells on site. Monitoring well MW17 was inaccessible due to standing water and could not be sampled. Twelve previously installed monitoring well locations (MW01 - MW05, 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 reports are included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Analytical results from the baseline sampling event indicated that BTEX concentrations were above COGCC Table 910-1 groundwater standards in monitoring wells MW05-R and MW23. Analytical results from the first quarter 2016 site-wide sampling event indicated that BTEX concentrations were above COGCC regulatory standards in monitoring wells MW21 and MW23. BTEX concentrations were below COGCC regulatory standards at the remaining eleven 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 first quarter 2016, a total of 132.67 pounds of hydrocarbon mass was removed. Operation of the SVE/AS remediation system will continue through the second quarter 2016.

Second quarter 2016 groundwater sampling will be conducted during June 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 (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		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
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
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
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
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

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

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

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

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COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
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 ⁽²⁾	3/31/2016	NS	NS	NS	NS	NM
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

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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 (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
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
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
MW21	3/31/2014	<1.0	<1.0	250	1,000	14.56
MW21	6/17/2014	<1.0	<1.0	470	3,200	13.47
MW21	9/17/2014	<1.0	<1.0	380	3,400	12.97
MW21	12/2/2014	2.5	2.2	1,400	18,000	12.31
MW21	3/16/2015	3.3	3.7	1,700	26,000	11.52
MW21	6/25/2015	4.5	4.9	1,300	21,000	10.14
MW21	9/25/2015	2.6	3.6	840	14,000	10.92
MW21	12/16/2015	1.6	2.6	590	8,400	10.49
MW21	3/31/2016	2.7	3.0	860	1,100	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

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COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
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
MW23	1/25/2016	18	7.9	1,300	13,000	11.03
MW23	3/31/2016	39	15	1,300	650	10.20
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

Notes:

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

COGCC = Colorado Oil and Gas Conservation Commission

2. 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



MW23		
Compound (µg/L)	1/25/2016	3/31/2016
Benzene	18	39
Toluene	7.9	15
Ethylbenzene	1,300	1,300
Total Xylenes	13,000	650

MW10-R		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	130	<1.0
Total Xylenes	530	3.0

MW13		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	1.5	1.6
Toluene	1.3	1.8
Ethylbenzene	650	400
Total Xylenes	1,400	1,200

MW24		
Compound (µg/L)	1/25/2016	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	2.5	7.0

MW02-R		
Compound (µg/L)	1/25/2016	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

MW07		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	6.1

MW19		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

Surface Drainage

MW03-R		
Compound (µg/L)	1/25/2016	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	5.7	<1.0
Total Xylenes	160	<1.0

MW20		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

MW05-R		
Compound (µg/L)	1/25/2016	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	300	560
Total Xylenes	14,000	530

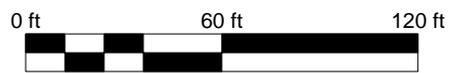
MW21		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	1.6	2.7
Toluene	2.6	3.0
Ethylbenzene	590	860
Total Xylenes	8,400	1,100

MW17		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	NS
Toluene	<1.0	NS
Ethylbenzene	<1.0	NS
Total Xylenes	<1.0	NS

MW18		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

MW22		
Compound (µg/L)	12/16/2015	3/31/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	3.6	4.2

Note: Surface drainage direction is estimated based on site topography and is not related to regional topography.



County Road 49

NOBLE ENERGY
Dechant D31-31D

PDC ENERGY
Dechant 1-31A

DRAWN BY: ESS

DATE: 4/6/2016

Facility Diagram
PDC Energy – DJ Basin
Dechant 1-31A Tank Battery
SWSW S31 T3N R64W
Weld County, CO



6899 Pecos Street
Unit C
Denver, CO 80221

LEGEND

- Excavation Area
- Monitoring Well Location
- Destroyed Monitoring Well Location
- Groundwater Flow Direction
- Point of Release

All locations are approximate unless otherwise noted

FIGURE 1
GROUNDWATER ANALYTICAL RESULTS MAP



DATE: January 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

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

February 01, 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 01/25/16 17:20. 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:
02/01/16 15:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-02R	1601209-01	Water	01/25/16 10:11	01/25/16 17:20
MW-03R	1601209-02	Water	01/25/16 10:10	01/25/16 17:20
MW-05R	1601209-03	Water	01/25/16 10:20	01/25/16 17:20
MW-24	1601209-04	Water	01/25/16 10:29	01/25/16 17:20
MW-23	1601209-05	Water	01/25/16 10:21	01/25/16 17:20

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:
02/01/16 15:00

Summit Scientific

1601209

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC Energy
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Kate F

Project Manager: Mark Longhurst
E-Mail: Mark.longhurst@pdcecom
Project Name: Dechant 1-31A
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX 8280				
MW-02R	1/25/16	1011	1	X				X				X				
MW-03R	↓	1010	↓													
MW-05R	↓	1020	↓													
MW-24	↓	1029	↓													
MW-23	↓	1021	↓													
Relinquished by: <u>[Signature]</u> Date/Time: <u>1/25/16 16:30</u>				Received by: <u>[Signature]</u> Date/Time: <u>1/25/16 17:20</u>				Turn Around Time (Check)				Notes:				
								Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/>				Standard <input checked="" type="checkbox"/>				
								24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/>								
Relinquished by:				Received in Lab by:				Sample Integrity:				Temperature Upon Receipt: <u>5.5</u>				
								Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				on 1CR				

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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:
 02/01/16 15:00

MW-02R
1601209-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/16 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1601273	01/31/16	01/31/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **01/25/16 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>103 %</i>	<i>37-154</i>		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		<i>97.9 %</i>	<i>45-149</i>		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>96.2 %</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:
 02/01/16 15:00

MW-03R
1601209-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1601273	01/31/16	01/31/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	5.7	1.0	"	"	"	"	"	"	
Xylenes (total)	160	1.0	"	"	"	"	"	"	

Date Sampled: **01/25/16 10:10**

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>		98.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		96.9 %	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:
 02/01/16 15:00

MW-05R
1601209-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1601273	01/29/16	01/29/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	300	1.0	"	"	"	"	"	"	
Xylenes (total)	14000	100	"	100	"	"	"	"	

Date Sampled: **01/25/16 10:20**

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>		98.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.8 %	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:
 02/01/16 15:00

MW-24
1601209-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/16 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1601273	01/31/16	01/31/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	2.5	1.0	"	"	"	"	"	"	

Date Sampled: **01/25/16 10:29**

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>		96.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.9 %	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:
 02/01/16 15:00

MW-23
1601209-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/16 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	18	1.0	ug/l	1	1601273	01/29/16	01/29/16	EPA 8260B	
Toluene	7.9	1.0	"	"	"	"	"	"	
Ethylbenzene	1300	100	"	100	"	"	"	"	
Xylenes (total)	13000	100	"	"	"	"	"	"	

Date Sampled: **01/25/16 10:21**

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>		97.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %	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:
02/01/16 15:00

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 1601273 - EPA 5030 Water MS

Blank (1601273-BLK1)

Prepared & Analyzed: 01/28/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.0	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.8	45-146			

LCS (1601273-BS1)

Prepared & Analyzed: 01/28/16

Benzene	41.6	1.0	ug/l	33.3		125	51-132			
Toluene	41.5	1.0	"	33.3		124	51-138			
Ethylbenzene	43.6	1.0	"	33.1		132	58-146			
m,p-Xylene	81.2	2.0	"	66.5		122	57-144			
o-Xylene	39.9	1.0	"	32.8		122	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.3		105	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	45-146			

Matrix Spike (1601273-MS1)

Source: 1601231-01

Prepared & Analyzed: 01/28/16

Benzene	42.3	1.0	ug/l	33.3	ND	127	34-141			
Toluene	42.8	1.0	"	33.3	ND	128	27-151			
Ethylbenzene	45.8	1.0	"	33.1	ND	139	29-160			
m,p-Xylene	86.1	2.0	"	66.5	ND	129	20-166			
o-Xylene	42.1	1.0	"	32.8	ND	128	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3		103	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	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:
 02/01/16 15:00

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 1601273 - EPA 5030 Water MS

Matrix Spike Dup (1601273-MSD1)	Source: 1601231-01			Prepared & Analyzed: 01/28/16						
Benzene	41.7	1.0	ug/l	33.3	ND	125	34-141	1.31	32	
Toluene	42.1	1.0	"	33.3	ND	126	27-151	1.60	25	
Ethylbenzene	45.2	1.0	"	33.1	ND	137	29-160	1.43	50	
m,p-Xylene	85.0	2.0	"	66.5	ND	128	20-166	1.36	36	
o-Xylene	41.1	1.0	"	32.8	ND	125	33-159	2.40	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.4</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>100</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:
02/01/16 15:00

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

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.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 05, 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 03/31/16 17:00. 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:
04/05/16 09:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02-R	1604001-01	Water	03/31/16 12:28	03/31/16 17:00
MW03-R	1604001-02	Water	03/31/16 12:38	03/31/16 17:00
MW05-R	1604001-03	Water	03/31/16 12:46	03/31/16 17:00
MW07	1604001-04	Water	03/31/16 12:56	03/31/16 17:00
MW10-R	1604001-05	Water	03/31/16 13:06	03/31/16 17:00
MW13	1604001-06	Water	03/31/16 12:31	03/31/16 17:00
MW18	1604001-07	Water	03/31/16 12:59	03/31/16 17:00
MW19	1604001-08	Water	03/31/16 13:18	03/31/16 17:00
MW20	1604001-09	Water	03/31/16 12:48	03/31/16 17:00
MW21	1604001-10	Water	03/31/16 13:25	03/31/16 17:00
MW22	1604001-11	Water	03/31/16 13:31	03/31/16 17:00
MW23	1604001-12	Water	03/31/16 12:40	03/31/16 17:00
MW24	1604001-13	Water	03/31/16 13:17	03/31/16 17:00

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:
04/05/16 09:27

Summit Scientific

1604001.2

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 2 of 2

Client: PDC Energy
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Kate F, Chris O

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: Dechant 1-31A
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX 8280				
MW 21	3-31-16	1325	3	X				X				X				
MW 22	3-31-16	1331	3	X				X				X				
MW 23	3-31-16	1240	3	X				X				X				
MW 24	3-31-16	1317	3	X				X				X				
Relinquished by: <u>[Signature]</u> Date/Time: <u>3/31/16 1700</u>				Received by: <u>[Signature]</u> Date/Time: <u>3/31/16 1700</u>				Turn Around Time (Check)				Notes:				
Relinquished by: <u>[Signature]</u> Date/Time: <u>3/31/16 1750</u>				Received by: _____ Date/Time: _____				Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>				on ice				
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>5.2°C</u> Intact: <input checked="" type="radio"/> Yes <input type="radio"/> 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:
04/05/16 09:27

Sample Receipt Checklist

S2 Work Order: 1604001

Client: PDC Energy Client Project ID: Dechant 1-31A

Shipped Via: pick-up Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID				
Temp (°C)	<u>5.2°C</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 ⁽¹⁾ ?			<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>			
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<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):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Nakita
Custodian Printed Name

ML
Signature or initials of Custodian

3/31/16 1050
Date/Time



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

Project: Dechant 1-31A

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/05/16 09:27

MW02-R
1604001-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/02/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 12:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	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:
 04/05/16 09:27

MW03-R
1604001-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.2 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		108 %	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:
 04/05/16 09:27

MW05-R
1604001-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	560	100	"	100	"	"	04/02/16	"	
Xylenes (total)	530	1.0	"	1	"	"	04/02/16	"	

Date Sampled: **03/31/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		97.2 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		105 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		115 %	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:
 04/05/16 09:27

MW07
1604001-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	6.1	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 12:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		105 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %	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:
 04/05/16 09:27

MW10-R
1604001-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 13:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	3.0	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 13:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		104 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		109 %	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:
 04/05/16 09:27

MW13
1604001-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.6	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	1.8	1.0	"	"	"	"	"	"	
Ethylbenzene	400	25	"	25	"	"	04/02/16	"	
Xylenes (total)	1200	1.0	"	1	"	"	04/02/16	"	

Date Sampled: **03/31/16 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		95.4 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		120 %	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:
 04/05/16 09:27

MW18
1604001-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 12:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	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:
 04/05/16 09:27

MW19
1604001-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 13:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 13:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		97.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		104 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		108 %	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:
 04/05/16 09:27

MW20
1604001-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.7 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		104 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		110 %	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:
 04/05/16 09:27

MW21
1604001-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	2.7	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	3.0	1.0	"	"	"	"	"	"	
Ethylbenzene	860	100	"	100	"	"	04/02/16	"	
Xylenes (total)	1100	1.0	"	1	"	"	04/02/16	"	

Date Sampled: **03/31/16 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		94.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		124 %	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:
 04/05/16 09:27

MW22
1604001-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	4.2	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 13:31**

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>		105 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %	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:
 04/05/16 09:27

MW23
1604001-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	39	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	15	1.0	"	"	"	"	"	"	
Ethylbenzene	1300	100	"	100	"	"	04/02/16	"	
Xylenes (total)	650	1.0	"	1	"	"	04/02/16	"	

Date Sampled: **03/31/16 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		95.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		113 %	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:
 04/05/16 09:27

MW24
1604001-13 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/31/16 13:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1604010	04/01/16	04/02/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	7.0	1.0	"	"	"	"	"	"	

Date Sampled: **03/31/16 13:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.2 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		109 %	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:
04/05/16 09:27

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 1604010 - EPA 5030 Water MS

Blank (1604010-BLK1)

Prepared & Analyzed: 04/01/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.0		"	13.3		89.9	37-154			
Surrogate: Toluene-d8	14.0		"	13.3		105	45-149			
Surrogate: 4-Bromofluorobenzene	14.2		"	13.3		107	45-146			

LCS (1604010-BS1)

Prepared & Analyzed: 04/01/16

Benzene	33.2	1.0	ug/l	33.3		99.5	51-132			
Toluene	32.8	1.0	"	33.3		98.3	51-138			
Ethylbenzene	36.3	1.0	"	33.1		110	58-146			
m,p-Xylene	77.2	2.0	"	66.5		116	57-144			
o-Xylene	35.3	1.0	"	32.7		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	11.8		"	13.3		88.3	37-154			
Surrogate: Toluene-d8	13.9		"	13.3		104	45-149			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104	45-146			

Matrix Spike (1604010-MS1)

Source: 1604001-01

Prepared & Analyzed: 04/01/16

Benzene	37.2	1.0	ug/l	33.3	ND	111	34-141			
Toluene	32.6	1.0	"	33.3	ND	97.8	27-151			
Ethylbenzene	37.0	1.0	"	33.1	ND	112	29-160			
m,p-Xylene	78.9	2.0	"	66.5	ND	119	20-166			
o-Xylene	36.8	1.0	"	32.7	ND	113	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.8		"	13.3		88.9	37-154			
Surrogate: Toluene-d8	14.2		"	13.3		106	45-149			
Surrogate: 4-Bromofluorobenzene	14.5		"	13.3		109	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:
 04/05/16 09:27

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 1604010 - EPA 5030 Water MS

Matrix Spike Dup (1604010-MSD1)	Source: 1604001-01			Prepared & Analyzed: 04/01/16						
Benzene	36.7	1.0	ug/l	33.3	ND	110	34-141	1.22	32	
Toluene	31.9	1.0	"	33.3	ND	95.6	27-151	2.26	25	
Ethylbenzene	36.2	1.0	"	33.1	ND	109	29-160	2.38	50	
m,p-Xylene	76.0	2.0	"	66.5	ND	114	20-166	3.81	36	
o-Xylene	34.4	1.0	"	32.7	ND	105	33-159	6.83	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>11.6</i>		<i>"</i>	<i>13.3</i>		<i>86.7</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.6</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.8</i>		<i>"</i>	<i>13.3</i>		<i>103</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:
04/05/16 09:27

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

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.