

PDC Energy, Inc.
First Quarter 2017 Groundwater Monitoring Summary

May 2, 2017

Former Ursula #2 Tank Battery
NENE Section 28 T2N R66W
Weld County, API # 05-123-09920
Facility # 441395
Remediation # 9281

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former Ursula #2 tank battery. On March 29 and 30, 2017, groundwater monitoring was conducted at seventeen (17) temporary groundwater monitoring locations (BH02, BH04, BH05, BH07 – BH09, BH13, BH15, BH16, BH18 – BH22, BH24, BH26, and BH28) and one remediation well (RW05). All seventeen temporary monitoring wells were installed using a hand-auger, in active ranch or cropland. Temporary well casing was installed at each location and wells were purged, sampled, and subsequently abandoned. GPS points of the temporary wells were collected to ensure groundwater sample locations remain consistent between quarters. Remediation well RW05 was incorporated into the monitoring well network in place of temporary monitoring well BH10 due to reoccurring refusal during hand auger installation. Monitoring wells BH01, BH03, BH06, BH11-BH12, BH14, BH17, BH23, BH25, BH27, BH29, and BH30 were previously removed from the monitoring well network and consequently not sampled. Eighteen (18) 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 reports are included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. First quarter 2017 analytical results indicate that BTEX concentrations are above applicable COGCC Table 910-1 groundwater standards in nine temporary monitoring wells (BH02, BH04, BH05, BH07, BH15, BH18, BH19, BH20, and BH21). BTEX concentrations are below COGCC regulatory standards in the remaining nine sample locations.

Three mobile enhanced fluid recovery (EFR) and air sparge (AS) events were conducted on site during third quarter 2016. A summary of the mobile EFR/AS operational data is provided in Table 2.

Between June 13 and June 27, 2016, a soil vapor extraction (SVE)/AS remediation system was installed on site to address remaining hydrocarbon impacts in soil and groundwater. The remediation system became operational on September 22, 2016. Operation and maintenance activities are conducted on a monthly basis. The remediation well network is illustrated on Figure 2. Volatile organic compound (VOC) 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 2017, 15.55 pounds of hydrocarbon mass was removed. A total of 144.98 pounds

of hydrocarbon mass have been removed by the SVE system since system start-up. Operation of the SVE/AS remediation system will continue as the selected remediation strategy through the second quarter 2017.

Second quarter 2017 groundwater sampling will be conducted during June 2017.

TABLE 1
FORMER URSULA #2 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample Location ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	3/23/2015	800	<1.0	750	420	~ 6
GW01	10/29/2015	1.1	<1.0	<1.0	27	~ 7
GW02	10/29/2015	3.2	<1.0	16	180	~ 7
GW03	11/13/2015	21	<1.0	260	3,600	~ 7
GW03-R	11/18/2015	<1.0	<1.0	11	61	~ 7
GW04	11/18/2015	<1.0	<1.0	<1.0	2.6	~ 7
GW05	11/22/2015	3.3	<1.0	55	250	~ 7
GW06	12/1/2015	<1.0	<1.0	42	8.2	~ 7
GW07	12/9/2015	<1.0	<1.0	1.3	3.2	~ 7
GW08	12/16/2015	<1.0	<1.0	10	130	~ 7
BH01	4/6/2015	<1.0	<1.0	<1.0	<1.0	6.53
BH01	Removed From Monitoring Well Network - June 2016					
BH02	4/6/2015	24	<1.0	1,600	13,000	7.02
BH02	9/21/2016	11	<1.0	810	4,300	7.63
BH02	12/13/2016	<1.0	<1.0	30	160	6.96
BH02	3/29/2017	5.5	<1.0	10	19,000	7.41
BH03	4/6/2015	<1.0	<1.0	<1.0	5.0	7.78
BH03	Removed From Monitoring Well Network - June 2016					
BH04	4/6/2015	1,100	6.4	920	8,900	6.99
BH04	9/21/2016	2,000	11	1,700	18,000	7.28
BH04	12/13/2016	2,600	9.3	1,400	19,000	5.76
BH04	3/29/2017	1,500	9.1	630	18,000	6.31
BH05	4/6/2015	1,100	7.0	1,200	9,400	9.23
BH05	9/21/2016	1,700	980	1,300	18,000	7.02
BH05	12/13/2016	1,200	7.4	1,200	15,000	5.44
BH05	3/29/2017	1,300	10	890	24,000	6.37
BH06	4/6/2015	<1.0	<1.0	<1.0	<1.0	7.75
BH06	Removed From Monitoring Well Network - June 2016					
BH07	4/6/2015	450	<1.0	12	540	6.69
BH07	9/21/2016	1,500	<1.0	260	720	7.16
BH07	12/13/2016	670	<1.0	70	210	5.33

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Sample Location ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH07	3/29/2017	650	<1.0	<1.0	3,500	5.80
BH08	4/6/2015	15	<1.0	4.0	3.5	5.20
BH08	9/21/2016	<1.0	<1.0	<1.0	<1.0	7.50
BH08	12/13/2016	<1.0	<1.0	<1.0	<1.0	5.29
BH08	3/29/2017	<1.0	<1.0	<1.0	<2.0	5.54
BH09	4/6/2015	28	200	130	2,700	6.00
BH09	9/21/2016	<1.0	<1.0	240	3,000	7.30
BH09	12/13/2016	<1.0	10	200	3,400	5.95
BH09	3/29/2017	<1.0	<1.0	<1.0	64	6.33
BH10	4/6/2015	2.5	1.6	2.5	5.0	8.81
BH10	9/21/2016	<1.0	<1.0	<1.0	<1.0	9.13
BH10	12/13/2016	<1.0	<1.0	<1.0	<1.0	7.45
BH10	3/29/2017	Abandoned				
BH11	4/10/2015	<1.0	<1.0	<1.0	<1.0	8.03
BH11	Removed From Monitoring Well Network - June 2016					
BH12	4/10/2015	<1.0	<1.0	<1.0	<1.0	9.16
BH12	Removed From Monitoring Well Network - June 2016					
BH13	4/10/2015	<1.0	<1.0	<1.0	<1.0	4.71
BH13	9/21/2016	<1.0	<1.0	3.3	2.2	7.91
BH13	12/13/2016	<1.0	<1.0	<1.0	<1.0	4.93
BH13	3/29/2017	<1.0	<1.0	<1.0	<2.0	5.17
BH14	4/10/2015	<1.0	<1.0	<1.0	<1.0	5.53
BH14	Removed From Monitoring Well Network - June 2016					
BH15	2/15/2016	520	<1.0	1,200	620	6.81
BH15	9/21/2016	1,000	<1.0	1,200	12,000	7.22
BH15	12/13/2016	88	<1.0	250	1,800	5.31
BH15	3/29/2017	1,800	<1.0	3,700	41,000	5.97
BH16	2/15/2016	<1.0	<1.0	<1.0	<1.0	6.76
BH16	9/21/2016	<1.0	<1.0	<1.0	<1.0	7.57
BH16	12/13/2016	<1.0	<1.0	<1.0	<1.0	5.05

TABLE 1
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Sample Location ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH16	3/29/2017	<1.0	<1.0	<1.0	1,200	5.51
BH17	2/15/2016	<1.0	<1.0	<1.0	<1.0	7.74
BH17	Removed From Monitoring Well Network - June 2016					
BH18	2/15/2016	100	44	140	4,200	7.29
BH18	9/21/2016	740	<1.0	840	7,200	7.34
BH18	12/13/2016	280	<1.0	480	4,100	5.18
BH18	3/29/2017	510	2.4	890	19,000	5.67
BH19	2/15/2016	320	210	250	3,000	6.97
BH19	9/21/2016	750	290	700	16,000	7.62
BH19	12/13/2016	61	450	280	6,900	5.70
BH19	3/29/2017	45	<1.0	11	22,000	5.53
BH20	2/15/2016	1,100	45	340	2,600	6.84
BH20	9/21/2016	1,800	130	100	18,000	7.64
BH20	12/13/2016	250	<1.0	5.6	2,100	5.54
BH20	3/29/2017	2,300	94	1,100	26,000	5.35
BH21	2/15/2016	34	<1.0	1.7	7.1	7.19
BH21	9/21/2016	12	<1.0	13	220	7.81
BH21	12/13/2016	79	<1.0	<1.0	<1.0	5.85
BH21	3/29/2017	150	<1.0	<1.0	1,000	5.72
BH22	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.59
BH22	9/21/2016	<1.0	<1.0	<1.0	<1.0	7.49
BH22	12/13/2016	<1.0	<1.0	<1.0	<1.0	5.42
BH22	3/29/2017	<1.0	<1.0	<1.0	<2.0	5.85
BH23	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.79
BH23	Removed From Monitoring Well Network - June 2016					
BH24	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.64
BH24	9/21/2016	2.4	<1.0	3.6	<1.0	7.92
BH24	12/13/2016	<1.0	<1.0	<1.0	<1.0	5.36
BH24	3/29/2017	<1.0	<1.0	<1.0	<2.0	5.92

TABLE 1
FORMER URSULA #2 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample Location ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH25	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.64
BH25	Removed From Monitoring Well Network - June 2016					
BH26	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.40
BH26	9/21/2016	<1.0	<1.0	<1.0	<1.0	8.47
BH26	12/13/2016	<1.0	<1.0	<1.0	<1.0	5.23
BH26	3/29/2017	<1.0	<1.0	<1.0	<2.0	5.37
BH27	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.55
BH27	Removed From Monitoring Well Network - June 2016					
BH28	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.42
BH28	9/21/2016	<1.0	<1.0	<1.0	<1.0	7.66
BH28	12/13/2016	<1.0	<1.0	<1.0	<1.0	5.02
BH28	3/29/2017	<1.0	<1.0	<1.0	<2.0	5.07
BH29	2/18/2016	<1.0	<1.0	<1.0	<1.0	3.48
BH29	Removed From Monitoring Well Network - June 2016					
BH30	2/18/2016	<1.0	<1.0	<1.0	<1.0	2.55
BH30	Removed From Monitoring Well Network - June 2016					
RW05	3/30/2017	<1.0	<1.0	<1.0	<2.0	6.60

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
2. Depth to water measurements collected prior to fourth quarter 2016 were measured from top of casing or ground surface for monitoring well samples and excavation samples respectively. Subsequent monitoring well measurements and stick-ups were collected from top of casing and used to adjust water levels to reflect depth of water from ground surface.
3. Temporary well not installed due to hand auger refusal; RW05 installed adjacent as replacement well.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L= Micrograms per liter

BOLD = Analytical result is in exceedance of COGCC groundwater standards.

TABLE 2
FORMER URSULA 2 TANK BATTERY
EFR / AS OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	Air Sparge Wells	Air Injection Pressure (psi)	Average Air Flow Rate (cfm)
Third Quarter 2016 Data						
7/15/2016	RW03, RW08, RW10, RW12, RW14	6	1260	RW04, RW07, RW09, RW11, RW13	20	21
7/29/2016	EFR01, EFR02, EFR03, EFR04, EFR06, EFR07	6	210	AS02, AS03, AS04, AS05	20	10
8/11/2016	RW06, RW09, RW10, RW12, RW14	6	1470	RW04, RW05, RW08, RW11, RW13	20	14
Totals		18	2940		-	-

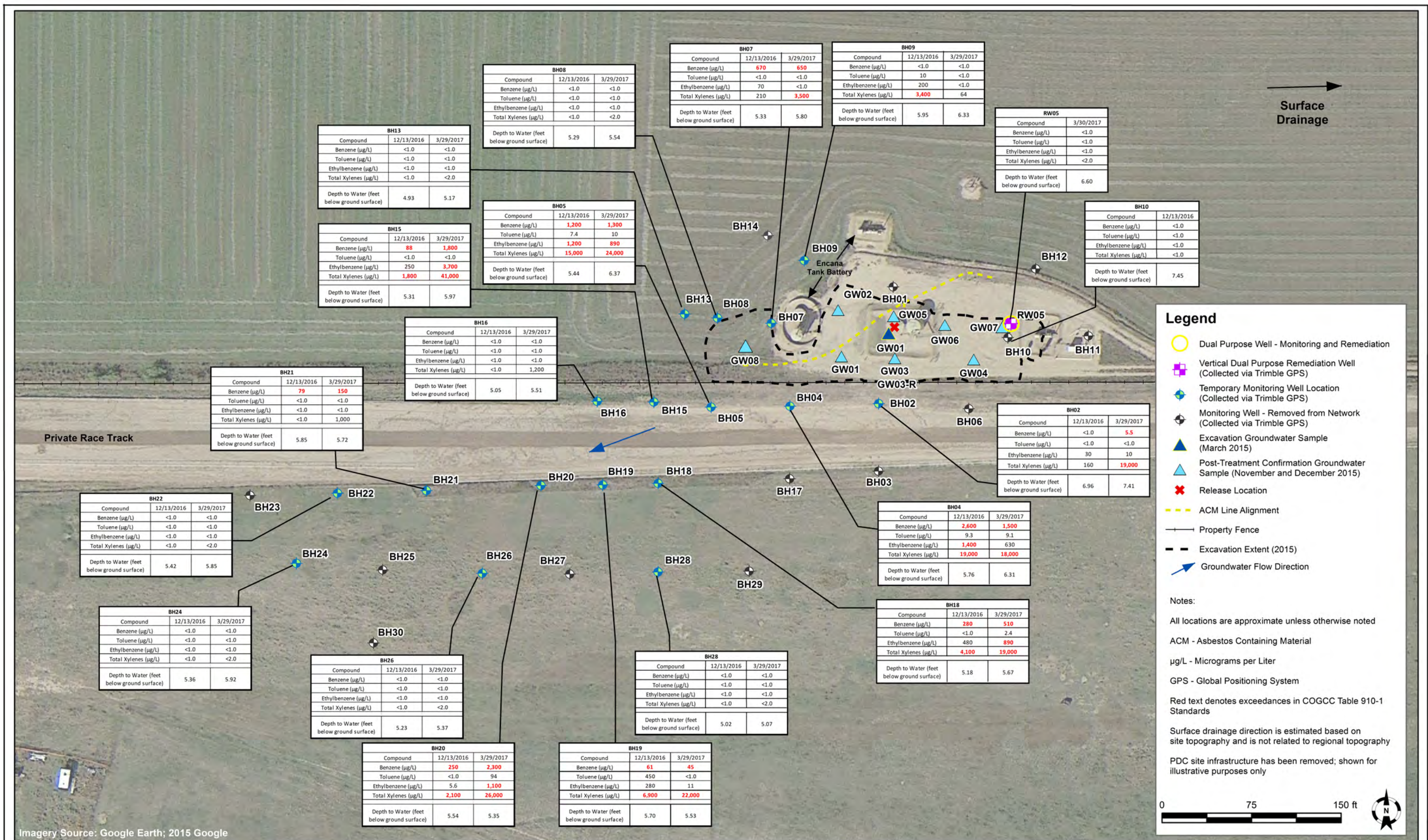
Notes:

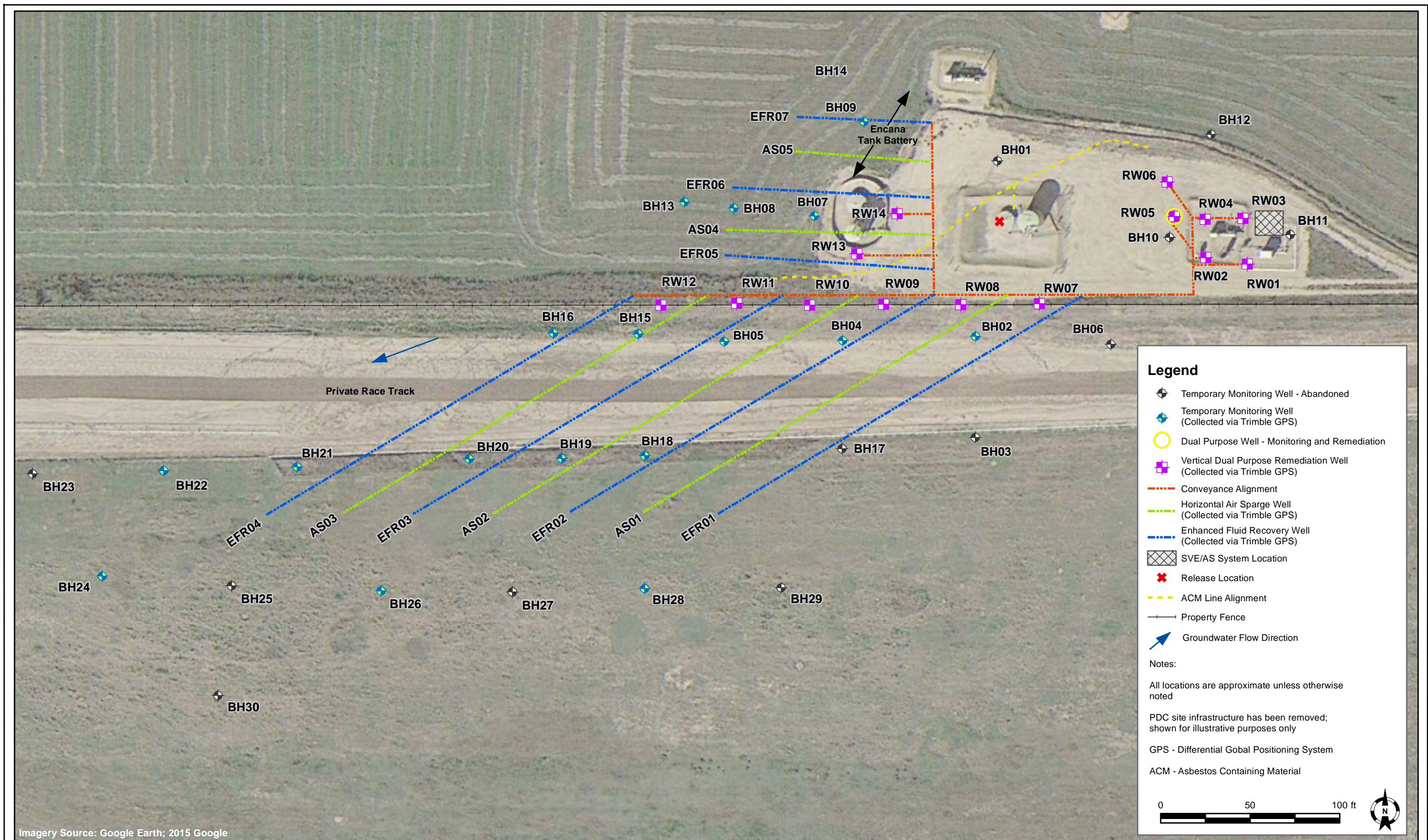
EFR = Enhanced fluid recovery


AS = Air sparge

psi = Pounds per square inch

cfm = Cubic feet per minute





DATE: April 2017	 TASMAN GEOSCIENCES Tasman Geosciences, Inc. 6899 Pecos Street - Unit C Denver, CO 80221	PDC Energy, Inc. - DJ Basin Ursula #2 Tank Battery NENE Section 28, Township 2 North, Range 66 West Weld County, Colorado	REMEDIATION SYSTEM LAYOUT AND WELL LOCATION MAP	FIGURE 2
DESIGNED BY: C. Hamlin				
DRAWN BY: D. Arnold				

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 05, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Ursula 2

Enclosed are the results of analyses for samples received by Summit Scientific on 03/30/17 09:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
Laboratory Manager



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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02	1703300-01	Water	03/29/17 13:09	03/30/17 09:05
BH04	1703300-02	Water	03/29/17 13:26	03/30/17 09:05
BH05	1703300-03	Water	03/29/17 14:15	03/30/17 09:05
BH07	1703300-04	Water	03/29/17 12:30	03/30/17 09:05
BH08	1703300-05	Water	03/29/17 12:17	03/30/17 09:05
BH09	1703300-06	Water	03/29/17 12:35	03/30/17 09:05
BH13	1703300-07	Water	03/29/17 12:20	03/30/17 09:05
BH15	1703300-08	Water	03/29/17 13:40	03/30/17 09:05
BH16	1703300-09	Water	03/29/17 13:55	03/30/17 09:05
BH18	1703300-10	Water	03/29/17 14:10	03/30/17 09:05
BH19	1703300-11	Water	03/29/17 14:25	03/30/17 09:05
BH20	1703300-12	Water	03/29/17 14:30	03/30/17 09:05
BH21	1703300-13	Water	03/29/17 14:50	03/30/17 09:05
BH22	1703300-14	Water	03/29/17 15:00	03/30/17 09:05
BH24	1703300-15	Water	03/29/17 15:10	03/30/17 09:05
BH26	1703300-16	Water	03/29/17 15:00	03/30/17 09:05
BH28	1703300-17	Water	03/29/17 14:45	03/30/17 09:05

Summit Scientific

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

Project: Ursula 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

Summit Scientific

1703300.1

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

Page 1 of 2

Client: PDC / Tasman Geosciences

Address: 6899 Pecos St, Unit C

City/State/Zip: Denver, CO 80221

Phone: 303-487-1228 Fax:

Sampler Name: Mitch Weller

Project Manager: Mark Longhurst

E-Mail: mark.longhurst@pdce.com

Project Name: Ursula #2

Project Number: N/A

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 - 8260															
BH 02	3-29-17	1309	3			X		X			X																
BH 04		1326																									
BH 05		1415																									
BH 07		1230																									
BH 08		1217																									
BH 09		1235																									
BH 13		1220																									
BH 15		1340																									
BH 16		1355																									
BH 18	↓	1410	↓																								

Relinquished by: <u>Mitch Weller</u>	Date/Time: <u>3-29-17 9:05</u>	Received by: <u>MA</u>	Date/Time: <u>3/29/17 9:05</u>	Turn Around Time (Check)	Notes:
Relinquished by: <u>MA</u>	Date/Time: <u>3/29/17 9:35</u>	Received by: <u>MA</u>	Date/Time: <u>3/29/17 9:40</u>	Same Day <input type="checkbox"/>	on ice
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	24 Hours <input type="checkbox"/>	
				48 Hours <input type="checkbox"/>	
				Sample Integrity:	
				Temperature Upon Receipt: <u>1.5°C</u>	
				Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

www.s2scientific.com

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

Sample Receipt Checklist

S2 Work Order: 1703300

Client: PDC/Tasman

Client Project ID: Ursula #2

Shipped Via: P/U

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

Airbill #:

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

Cooler ID					
Temp (°C)	<u>1.5</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⁾ ?		<input checked="" type="checkbox"/>		
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 ⁽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

MA
Signature or Initials of Custodian

3/30/17 935
Date/Time



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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH02
1703300-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 13:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	5.5	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	10	1.0	"	"	"	"	"	"	
Xylenes (total)	19000	200	"	100	"	"	"	"	

Date Sampled: **03/29/17 13:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH04
1703300-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1500	100	ug/l	100	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	9.1	1.0	"	1	"	"	"	"	
Ethylbenzene	630	100	"	100	"	"	"	"	
Xylenes (total)	18000	200	"	"	"	"	"	"	

Date Sampled: **03/29/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		97.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		108 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH05
1703300-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1300	100	ug/l	100	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	10	1.0	"	1	"	"	"	"	
Ethylbenzene	890	100	"	100	"	"	"	"	
Xylenes (total)	24000	200	"	"	"	"	"	"	

Date Sampled: **03/29/17 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		92.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH07
1703300-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	650	100	ug/l	100	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	3500	200	"	100	"	"	"	"	

Date Sampled: **03/29/17 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		105 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH08
1703300-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH09
1703300-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	64	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.0 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH13
1703300-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH15
1703300-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1800	100	ug/l	100	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	"	"	
Ethylbenzene	3700	100	"	100	"	"	"	"	
Xylenes (total)	41000	200	"	"	"	"	"	"	

Date Sampled: **03/29/17 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH16
1703300-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	1200	50	"	25	"	"	"	"	

Date Sampled: **03/29/17 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		119 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH18
1703300-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	510	100	ug/l	100	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	2.4	1.0	"	1	"	"	"	"	
Ethylbenzene	890	100	"	100	"	"	"	"	
Xylenes (total)	19000	200	"	"	"	"	"	"	

Date Sampled: **03/29/17 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH19
1703300-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	45	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	11	1.0	"	"	"	"	"	"	
Xylenes (total)	22000	200	"	100	"	"	"	"	

Date Sampled: **03/29/17 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH20
1703300-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	2300	100	ug/l	100	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	94	1.0	"	1	"	"	"	"	
Ethylbenzene	1100	100	"	100	"	"	"	"	
Xylenes (total)	26000	200	"	"	"	"	"	"	

Date Sampled: **03/29/17 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.0 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.4 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH21
1703300-13 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	150	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	1000	20	"	10	"	"	"	"	

Date Sampled: **03/29/17 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		126 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH22
1703300-14 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.1 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH24
1703300-15 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH26
1703300-16 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

BH28
1703300-17 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/17 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703361	04/04/17	04/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/29/17 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	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: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

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 1703361 - EPA 5030 Water MS

Blank (1703361-BLK1)

Prepared & Analyzed: 04/04/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.2	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	45-146			

LCS (1703361-BS1)

Prepared & Analyzed: 04/04/17

Benzene	29.5	1.0	ug/l	33.3		88.6	51-132			
Toluene	33.9	1.0	"	33.3		102	51-138			
Ethylbenzene	38.4	1.0	"	33.1		116	58-146			
m,p-Xylene	79.5	2.0	"	66.5		120	57-144			
o-Xylene	36.8	1.0	"	32.7		112	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.3		99.3	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	45-146			

Matrix Spike (1703361-MS1)

Source: 1703300-05

Prepared & Analyzed: 04/04/17

Benzene	29.2	1.0	ug/l	33.3	ND	87.6	34-141			
Toluene	33.9	1.0	"	33.3	ND	102	27-151			
Ethylbenzene	37.6	1.0	"	33.1	ND	114	29-160			
m,p-Xylene	78.4	2.0	"	66.5	ND	118	20-166			
o-Xylene	36.3	1.0	"	32.7	ND	111	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		101	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	45-146			

Summit Scientific

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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

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 1703361 - EPA 5030 Water MS

Matrix Spike Dup (1703361-MSD1)	Source: 1703300-05			Prepared & Analyzed: 04/04/17						
Benzene	29.7	1.0	ug/l	33.3	ND	89.2	34-141	1.80	32	
Toluene	33.9	1.0	"	33.3	ND	102	27-151	0.148	25	
Ethylbenzene	38.2	1.0	"	33.1	ND	116	29-160	1.74	50	
m,p-Xylene	78.2	2.0	"	66.5	ND	117	20-166	0.358	36	
o-Xylene	36.1	1.0	"	32.7	ND	110	33-159	0.553	26	
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.3		108	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	45-146			

Summit Scientific

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

Project: Ursula 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:12

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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 05, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Ursula 2

Enclosed are the results of analyses for samples received by Summit Scientific on 03/30/17 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 be 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
Laboratory Manager



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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RW05	1703303-01	Water	03/30/17 12:35	03/30/17 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.

A handwritten signature in black ink, appearing to be 'Mark Longhurst', written over a horizontal line.



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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:23

Sample Receipt Checklist

S2 Work Order: 1703303

Client: PDC

Client Project ID: Ursula #2

Shipped Via: PDU
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>1.7</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⁾ ?				
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?				
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⁾ ?	<input checked="" type="checkbox"/>			HCL
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 ⁽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

MAA
Signature or Initials of Custodian

3/30/17 1715
Date/Time



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

Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

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04/05/17 15:23

RW05
1703303-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

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Project: Ursula 2
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:23

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 1703362 - EPA 5030 Water MS

Blank (1703362-BLK1)

Prepared & Analyzed: 04/01/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3	101	37-154				
Surrogate: Toluene-d8	13.6		"	13.3	102	45-149				
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3	104	45-146				

LCS (1703362-BS1)

Prepared & Analyzed: 04/01/17

Benzene	29.3	1.0	ug/l	33.3	88.0	51-132				
Toluene	33.9	1.0	"	33.3	102	51-138				
Ethylbenzene	38.3	1.0	"	33.1	116	58-146				
m,p-Xylene	78.8	2.0	"	66.5	118	57-144				
o-Xylene	36.2	1.0	"	32.7	111	53-146				
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3	103	37-154				
Surrogate: Toluene-d8	13.2		"	13.3	99.1	45-149				
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3	98.7	45-146				

Matrix Spike (1703362-MS1)

Source: 1703302-01

Prepared & Analyzed: 04/01/17

Benzene	29.4	1.0	ug/l	33.3	ND	88.3	34-141			
Toluene	33.9	1.0	"	33.3	ND	102	27-151			
Ethylbenzene	38.6	1.0	"	33.1	ND	117	29-160			
m,p-Xylene	80.4	2.0	"	66.5	ND	121	20-166			
o-Xylene	37.0	1.0	"	32.7	ND	113	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3	105	37-154				
Surrogate: Toluene-d8	13.2		"	13.3	98.9	45-149				
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3	100	45-146				

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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 1703362 - EPA 5030 Water MS

Matrix Spike Dup (1703362-MSD1)		Source: 1703302-01			Prepared & Analyzed: 04/01/17					
Benzene	29.7	1.0	ug/l	33.3	ND	89.1	34-141	0.914	32	
Toluene	34.0	1.0	"	33.3	ND	102	27-151	0.501	25	
Ethylbenzene	38.0	1.0	"	33.1	ND	115	29-160	1.41	50	
m,p-Xylene	78.4	2.0	"	66.5	ND	118	20-166	2.56	36	
o-Xylene	36.2	1.0	"	32.7	ND	111	33-159	2.13	26	
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

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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