

January 4, 2016

Mr. Randall Ferguson
EHS Senior Compliance Specialist
PDC Energy, Inc.
1775 Sherman Street, Suite 3000
Denver, CO 80203

Re: **Produced Water Vessel Closure Report**
PA 11-30 Tank Battery
Facility ID: 323307
NWSW S30 T5N R64W
Blanket Remediation #: 9440

Dear Mr. Ferguson,

On behalf of PDC Energy, Inc. (PDC), Tasman Geosciences, Inc. (Tasman) has prepared this Produced Water Vessel Closure Report (Report) to document environmental sampling activities performed at the above-referenced site. This Report is being submitted under the Form 27 Management Plan for Closure of Produced Water Vessels, which has been assigned Blanket Remediation #9440 by the Colorado Oil and Gas Conservation Commission (COGCC).

A summary of excavation and environmental sampling activities is provided below.

Site Assessment Activities

On October 10, 2014, excavation and sampling activities were completed following the removal of the partially buried produced water vessel. Soil encountered in the excavation area was field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Field screening activities indicated that petroleum hydrocarbon impacts in soil were not present on site. Groundwater was encountered in the excavation area at approximately 4 feet below ground surface (bgs). One groundwater sample (GW01) was collected and submitted to Summit Scientific Laboratories in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX).

Analytical results indicated BTEX concentrations were below COGCC Table 910-1 standards in groundwater sample GW01.

The excavation extent and groundwater sample location are illustrated on Figure 1. Groundwater analytical data is summarized in Table 1 and the laboratory analytical report is provided in Attachment A.

Conclusions

Based on the groundwater analytical data described herein, petroleum hydrocarbon impacts were not encountered during the removal of the produced water vessel. Consequently, no further site investigation is recommended at this time. The facility was decommissioned following site assessment activities.

Please contact me at (720) 409-8791 if you have any questions regarding this report.

Sincerely,

A handwritten signature in blue ink that reads "Christine Wasko".

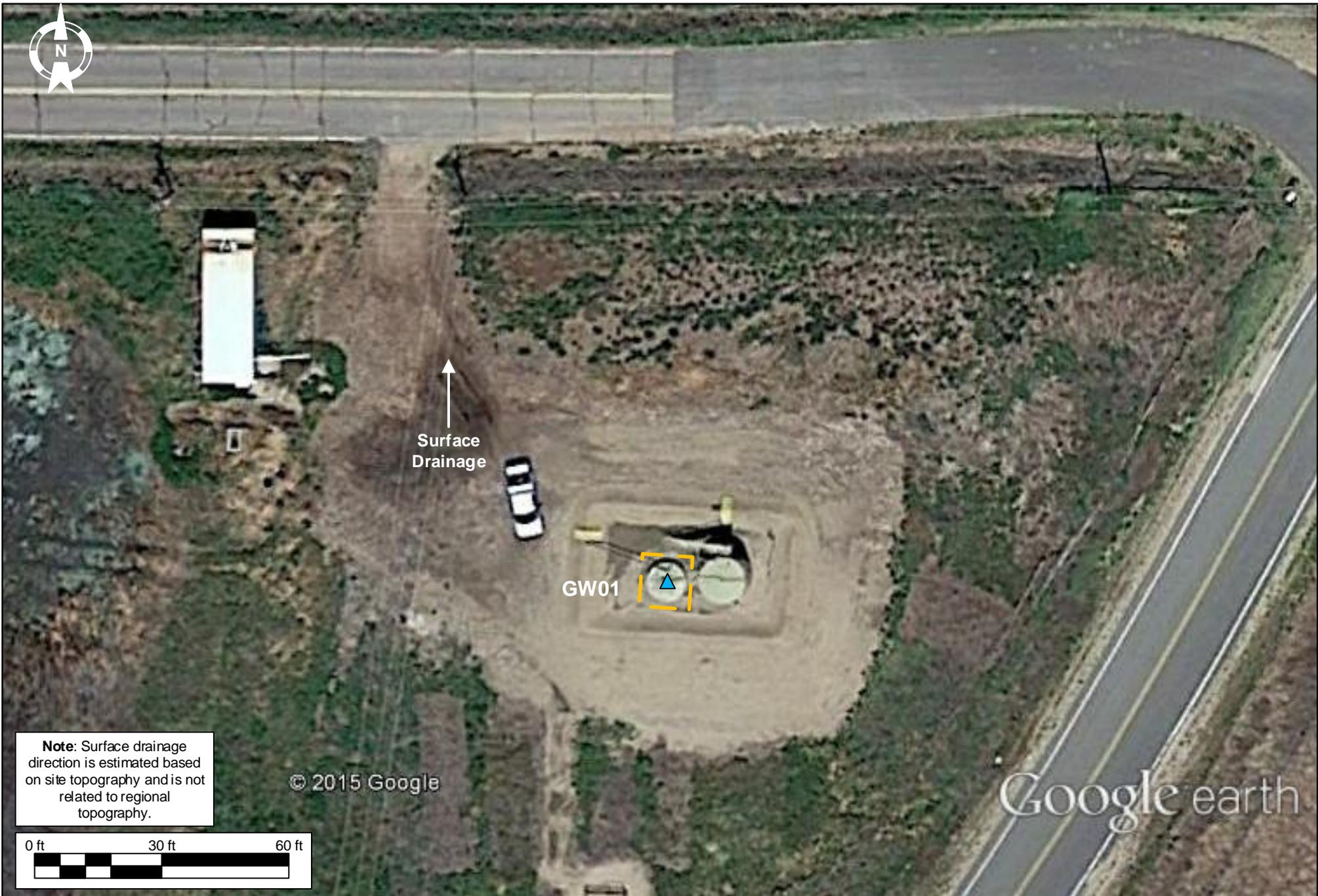
Christine Wasko
Project Manager
Tasman Geosciences, Inc.

Enclosures:

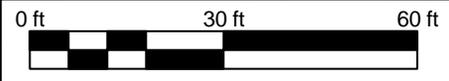
Figure 1 – Sample Location Map

Table 1 – Groundwater Analytical Results Summary Table

Attachment A – Laboratory Analytical Report



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



DRAWN BY:	MAP
DATE:	12/28/2015

Facility Diagram
 PDC Energy – DJ Basin
 PA 11-30 Tank Battery
 NWSW S30 T5N R64W
 Weld County, CO



TASMAN 6899 Pecos St., Unit C
 GEOSCIENCES Denver, CO 80221

LEGEND

- - - Excavation Extent
- ▲ Groundwater Sample Location

All locations are approximate unless otherwise noted

FIGURE 1
SAMPLE LOCATION MAP

TABLE 1
PA 11-30 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 bgs)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	10/10/2014	<1.0	<1.0	<1.0	<1.0	~4

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L= Micrograms per liter

bgs = Below ground surface

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

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

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 12, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: PA 11-30

Enclosed are the results of analyses for samples received by Summit Scientific on 10/10/14 16:00. 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: PA 11-30

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 10/12/14 19:59

GW01
1410081-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/10/14 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410116	10/11/14	10/11/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/10/14 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.9 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.5 %	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: PA 11-30

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/12/14 19:59

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 1410116 - EPA 5030 Water MS

Blank (1410116-BLK1)

Prepared & Analyzed: 10/11/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.1		"	13.2		84.2	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		95.8	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.9	45-146			

LCS (1410116-BS1)

Prepared & Analyzed: 10/11/14

Benzene	41.1	1.0	ug/l	33.3		123	51-132			
Toluene	40.8	1.0	"	33.3		122	51-138			
Ethylbenzene	41.6	1.0	"	33.1		126	58-146			
m,p-Xylene	82.2	2.0	"	66.5		124	57-144			
o-Xylene	41.2	1.0	"	32.8		126	53-146			
Surrogate: 1,2-Dichloroethane-d4	10.9		"	13.2		82.5	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.5	45-146			

Matrix Spike (1410116-MS1)

Source: 1410070-01

Prepared & Analyzed: 10/11/14

Benzene	42.2	1.0	ug/l	33.3	ND	127	34-141			
Toluene	42.1	1.0	"	33.3	ND	126	27-151			
Ethylbenzene	43.2	1.0	"	33.1	ND	131	29-160			
m,p-Xylene	86.4	2.0	"	66.5	ND	130	20-166			
o-Xylene	42.7	1.0	"	32.8	ND	130	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.2		"	13.2		85.2	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.4	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		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: PA 11-30

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/12/14 19:59

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 1410116 - EPA 5030 Water MS

Matrix Spike Dup (1410116-MSD1)	Source: 1410070-01			Prepared & Analyzed: 10/11/14						
Benzene	41.9	1.0	ug/l	33.3	ND	126	34-141	0.713	32	
Toluene	41.9	1.0	"	33.3	ND	126	27-151	0.548	25	
Ethylbenzene	43.4	1.0	"	33.1	ND	131	29-160	0.300	50	
m,p-Xylene	85.2	2.0	"	66.5	ND	128	20-166	1.47	36	
o-Xylene	42.6	1.0	"	32.8	ND	130	33-159	0.258	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>11.1</i>		<i>"</i>	<i>13.2</i>		<i>84.2</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.9</i>		<i>"</i>	<i>13.3</i>		<i>96.8</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.8</i>		<i>"</i>	<i>13.3</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: PA 11-30

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/12/14 19:59

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.