

March 1, 2016

Mr. Bob Chesson
Environmental Protection Specialist, Northeast Region
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

**Re: 2015 Annual Groundwater Monitoring Report
Steinwald #1 Tank Battery
NWNW Section 3 T1N R64W
Weld County, Colorado
Facility #: 319218
Spill Tracking #: 400615494 / 400612105
Remediation #: 8954**

Dear Mr. Chesson,

On behalf of PDC Energy, Inc. (PDC), Tasman Geosciences, Inc. (Tasman) is submitting this 2015 Annual Groundwater Monitoring Report for quarterly groundwater monitoring activities conducted at the Steinwald #1 tank battery (Site). This report documents the results of groundwater gauging, groundwater sampling, and remediation activities conducted at the Site during 2015. As per discussions with COGCC staff, PDC is providing this summary annual report to assist in updating the COGCC on the progress and status of this open remediation Site.

A historic release was discovered below the concrete produced water vessel on April 22, 2014, during facility plug and abandonment activities. Following excavation and well installation activities, groundwater monitoring was initiated during the fourth quarter 2014. The monitoring well network at the Site consists of 5 temporary monitoring and remediation wells (BH01 - BH05), as shown in Figure 1. Historic groundwater monitoring results are presented in Table 1. Groundwater monitoring results for 2015 are summarized below.

Sampling Event	Wells Exceeding COGCC Standards	Maximum Benzene Concentration (µg/L)
1Q 2015	BH01, BH04	260
2Q 2015	BH01, BH02, BH03, BH04	500
3Q 2015	BH01, BH02, BH03, BH04	300
4Q 2015	BH01, BH02, BH03, BH04	1,000

Tasman initiated monitored natural attenuation (MNA) at the site during the fourth quarter 2014. Based on the persistent benzene concentrations at the site, additional remedial strategies are being evaluated for implementation during 2016. Following the completion of remediation activities, four additional quarters of compliance groundwater monitoring will be conducted to confirm that BTEX concentrations remain below applicable COGCC Table 910-1 groundwater standards.

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

Sincerely,



Christine Wasko
Project Manager
Tasman Geosciences, Inc.



DATE:	December 2015
DESIGNED BY:	C. Wasko
DRAWN BY:	D. Arnold



TASMAN
GEOSCIENCES

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

PDC Energy
Steinwald #1 Tank Battery
NWNW Section 3, Township 1 North, Range 64 West
Weld County, Colorado

Groundwater Monitoring
Site Map

Figure
1

TABLE 1
STEINWALD #1 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	
BH01	10/7/2014	4.6	15	<1.0	9.2	NM
BH01	10/20/2014	<1.0	<1.0	<1.0	<1.0	67.08
BH01	2/23/2015	95	3.9	<1.0	5.1	66.90
BH01	5/14/2015	81	<1.0	<1.0	<1.0	66.56
BH01	8/6/2015	160	<1.0	<1.0	2.2	66.53
BH01	11/12/2015	360	3.8	<1.0	10	66.51
BH02	10/7/2014	<1.0	<1.0	<1.0	<1.0	NM
BH02	10/20/2014	<1.0	<1.0	<1.0	<1.0	68.90
BH02	2/23/2015	<1.0	<1.0	<1.0	<1.0	68.61
BH02	5/14/2015	5.2	<1.0	<1.0	<1.0	68.30
BH02	8/6/2015	6.9	<1.0	<1.0	<1.0	68.29
BH02	11/12/2015	21	<1.0	<1.0	<1.0	68.20
BH03	10/7/2014	<1.0	2.7	<1.0	5.7	NM
BH03	10/20/2014	<1.0	<1.0	<1.0	<1.0	63.86
BH03	2/23/2015	<1.0	<1.0	<1.0	<1.0	63.69
BH03	5/14/2015	6.1	<1.0	<1.0	<1.0	63.41
BH03	8/6/2015	10	<1.0	<1.0	<1.0	63.39
BH03	11/12/2015	56	<1.0	<1.0	<1.0	63.35
BH04	10/7/2014	130	670	29	390	NM
BH04	10/20/2014	91	720	51	1,000	66.58
BH04	10/23/2014	110	320	11	260	66.46
BH04	2/23/2015	260	8.2	<1.0	100	66.32
BH04	5/14/2015	500	10	2.3	41	66.00
BH04	8/6/2015	300	6.1	1.7	47	65.99
BH04	11/12/2015	1,000	4.2	3.2	44	65.96

TABLE 1
STEINWALD #1 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	
BH05	11/26/2014	<1.0	<1.0	<1.0	<1.0	65.68 ⁽²⁾
BH05	2/23/2015	<1.0	<1.0	<1.0	<1.0	65.88
BH05	5/14/2015	<1.0	<1.0	<1.0	<1.0	65.52
BH05	8/6/2015	<1.0	<1.0	<1.0	<1.0	65.56
BH05	11/12/2015	<1.0	<1.0	<1.0	<1.0	65.54

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. Water level measured on 11/24/2014

µg/L = Micrograms per liter

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

NM = Not measured

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