



**PDC Energy, Inc.**  
**Fourth Quarter 2022 Groundwater Monitoring Summary**

December 5, 2022

Former Olander U14-14 Wellhead  
SESW Section 14 T2N R68W  
Remediation # 12457

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Olander U14-14 Wellhead.

### **Site History and Background**

On December 13, 2018, a historic hydrocarbon release was discovered at the former wellhead while abandoning a short flowline segment between the wellhead and road. Between March 5, and July 3, 2019, twenty-seven monitoring wells (BH01-BH27) were installed to delineate the hydrocarbon impacts in groundwater and soil on location. During site investigation activities, groundwater was discovered within the boreholes between 7 feet and 11 feet below ground surface (bgs). Based on persisting benzene concentrations observed during initial groundwater monitoring activities, source mass removal activities were conducted in August 2019, and approximately 720 cubic yards of impacted material were removed from the former excavation. Based on the analytical results collected during source mass removal activities, hydrocarbon impacted soil remains within the unsaturated and saturated interval west of the former excavation extent.

On October 18, 2019, fourteen replacement monitoring wells (BH02R, BH03R, BH04R2, BH05R – BH08R, BH15R, BH16R, BH21R, BH22R, and BH24R – BH26R) were installed to replace monitoring wells damaged or destroyed during source mass removal activities. Between August 10, 2020, and November 4, 2020, five additional monitoring wells (BH28 – BH32) were installed to further delineate the extents of the remaining dissolved phase hydrocarbon impacts.

### **Groundwater Monitoring Activities**

On November 9, 2022, groundwater monitoring was conducted at the 29 site monitoring well locations (BH02R, BH03R, BH04R2, BH05R – BH08R, BH10 – BH14, BH15R, BH16R, BH17 – BH20, BH21R, BH22R, BH24R2, BH25R, BH26R, and BH27 – BH32). During gauging activities, light non-aqueous phase liquid (LNAPL) was detected in monitoring well BH15R, and consequently no sample was collected from this monitoring well. Twenty-eight groundwater samples were submitted to Summit Scientific Laboratories (Summit) for analysis of benzene toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B.

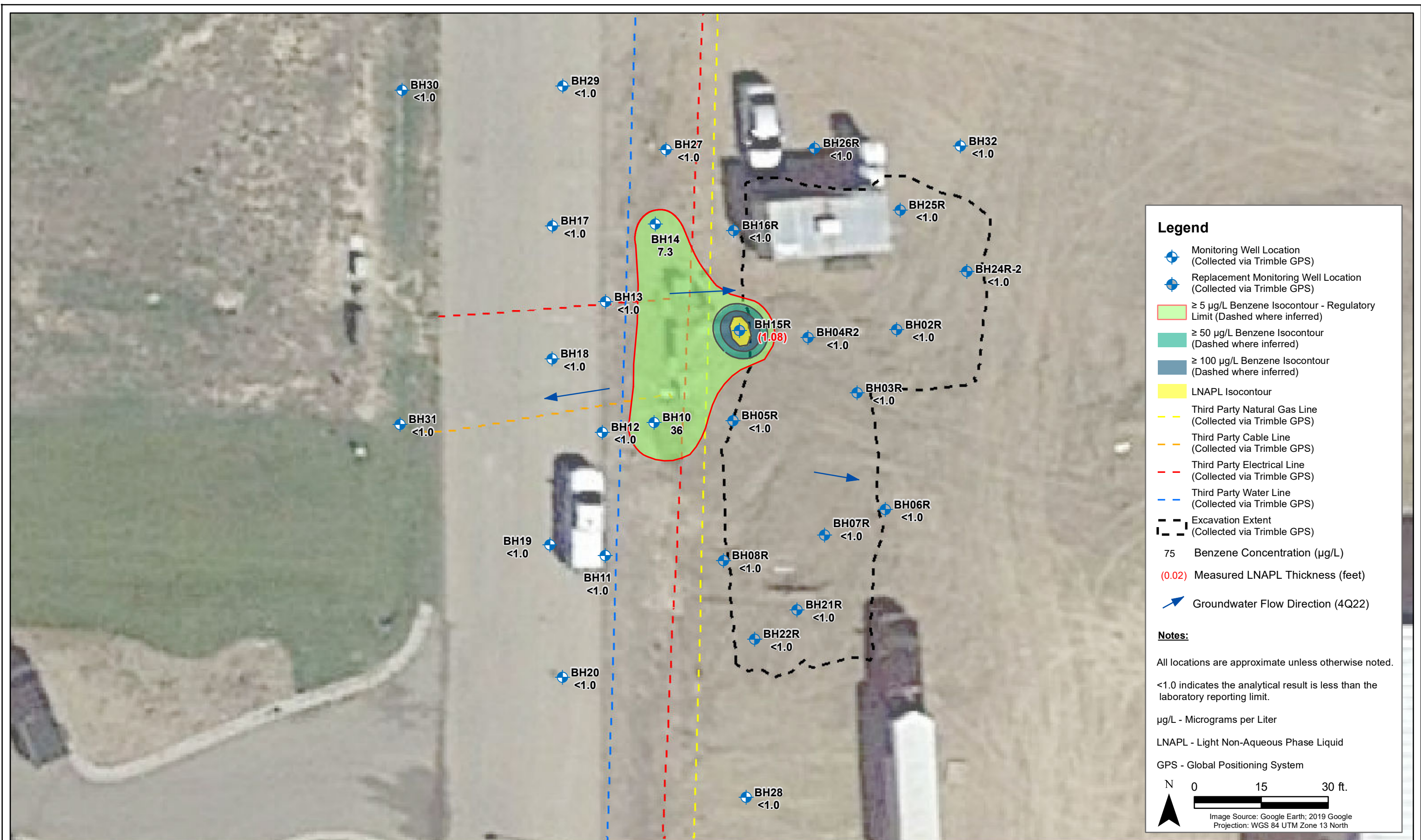
Fourth quarter 2022 analytical results indicated that organic compound concentrations were above the applicable COGCC Table 915-1 regulatory standards in monitoring wells BH10 and BH14. Organic

constituent concentrations were in compliance with the applicable regulatory standards in the remaining 26 sampled locations. Sample locations and benzene concentrations are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Analytical results are summarized in Table 1. The laboratory report is included as Attachment A.

### **Current Remediation Activities and Path Forward**

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site in the fourth quarter 2019. Due to persisting benzene concentrations, enhanced fluid recovery (EFR) and air sparge (AS) were initiated during the third quarter 2020 and will remain the selected remediation strategy through the first quarter 2023. EFR/AS operational data is summarized in Table 2.

First quarter 2023 groundwater sampling will be conducted during February 2023.



DATE:	December 27, 2022
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SESW, Section 14, Township 2 North, Range 68 West  
Weld County, Colorado

**BENZENE IN GROUNDWATER  
ISOCONTOUR MAP  
(11/09/2022)**

**FIGURE  
1**





DATE:	December 16, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	J. Clonts


**TASMAN**  
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 SESW, Section 14, Township 2 North, Range 68 West  
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**GROUNDWATER ELEVATION**  
**CONTOUR MAP**  
 (11/09/2022)

**FIGURE**  
**2**

**TABLE 1**  
**FORMER OLANDER U14-14 WELLHEAD**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	<b>-</b>	<b>-</b>
BH02R	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.88	4885.66
BH02R	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.48	4888.06
BH02R	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.48	4886.68
BH02R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.70	4885.46
BH02R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.72	4884.44
BH02R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.10	4885.06
BH02R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.80	4885.36
BH02R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.71	4884.45
BH03R	2/15/2021	<1.0	<1.0	6.4	<2.0	5.7	2.4	4.1	10.94	4884.18
BH03R	5/14/2021	<1.0	<1.0	9.4	2.4	3.0	3.9	3.9	8.76	4886.36
BH03R	8/20/2021	<1.0	<1.0	25	9.8	11	14	1.5	8.31	4886.07
BH03R	11/3/2021	<1.0	<1.0	4.3	<2.0	<1.0	6.6	1.5	10.61	4883.77
BH03R	2/1/2022	<1.0	<1.0	1.4	<2.0	2.6	3.4	<1.0	8.67	4885.71
BH03R	5/16/2022	<1.0	<1.0	1.1	<2.0	1.6	<1.0	<1.0	8.44	4885.94
BH03R	8/25/2022	<1.0	<1.0	1.3	<2.0	<1.0	4.7	<1.0	8.78	4885.60
BH03R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.19	4885.19
BH04R2	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.48	4885.56
BH04R2	5/14/2002	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.97	4888.07
BH04R2	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.49	4886.72
BH04R2	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.75	4885.46
BH04R2	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.79	4884.42
BH04R2	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.12	4885.09
BH04R2	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.83	4885.38
BH04R2	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.77	4884.44
BH05R	2/15/2021	1.7	<1.0	36	7.6	6.0	15	2.9	10.96	4884.04
BH05R	5/14/2021	2.7	<1.0	6.6	23	1.7	14	10	4.78	4890.22
BH05R	8/20/2021	10	<1.0	55	14	10	28	4.3	7.50	4886.72
BH05R	11/3/2021	<1.0	<1.0	1.2	<2.0	<1.0	1.3	<1.0	10.42	4883.80
BH05R	2/1/2022	2.2	<1.0	8.4	<2.0	6.4	15	<1.0	10.53	4883.69
BH05R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.45	4884.77
BH05R	8/25/2022	2.9	<1.0	3.1	<2.0	<1.0	12	2.1	10.48	4883.74
BH05R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	8.0	<1.0	11.10	4883.12
BH06R	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.26	4884.38
BH06R	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.02	4886.62
BH06R	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.11	4885.90
BH06R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.34	4883.67
BH06R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.36	4883.65
BH06R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.23	4883.78
BH06R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.62	4883.39
BH06R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.91	4883.10
BH07R	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.90	4888.78
BH07R	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.59	4891.09
BH07R	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.12	4886.71
BH07R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.24	4885.59
BH07R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.03	4884.80
BH07R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.31	4885.52
BH07R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.22	4885.61
BH07R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.77	4885.06
BH08R	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	2.1	<1.0	10.67	4884.34
BH08R	5/14/2021	52	<1.0	2.1	17	3.8	2.2	<1.0	6.56	4888.45
BH08R	8/20/2021	16	<1.0	<1.0	<2.0	<1.0	1.1	<1.0	7.67	4886.60
BH08R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.72	4883.55





**TABLE 1**  
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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	<b>-</b>	<b>-</b>
BH16R	2/15/2021	<1.0	<1.0	1.8	<2.0	1.7	2.0	2.4	10.85	4884.01
BH16R	5/14/2021	<1.0	<1.0	<1.0	<2.0	1.3	<1.0	1.6	6.23	4888.63
BH16R	8/20/2021	<1.0	<1.0	1.7	<2.0	3.9	2.4	2.9	8.32	4885.83
BH16R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.60	4883.55
BH16R	2/1/2022	<1.0	<1.0	2.6	<2.0	1.5	3.1	4.6	10.62	4883.53
BH16R	5/16/2022	<1.0	<1.0	1.7	<2.0	<1.0	<1.0	<1.0	10.58	4883.57
BH16R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	4.5	4.4	10.99	4883.16
BH16R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.16	4882.99
BH17	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.30	4883.94
BH17	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	1.5	8.16	4887.08
BH17	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.31	4888.18
BH17	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.08	4885.41
BH17	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.20	4884.29
BH17	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.64	4883.85
BH17	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.66	4883.83
BH17	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.68	4883.81
BH18	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.27	4883.95
BH18	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.62	4886.60
BH18	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.16	4886.31
BH18	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.81	4883.66
BH18	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.75	4883.72
BH18	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.83	4883.64
BH18	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	1.4	<1.0	11.22	4883.25
BH18	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.35	4883.12
BH19	2/15/2021	2.4	<1.0	4.3	<2.0	2.9	1.6	7.6	11.18	4884.12
BH19	5/14/2021	1.4	<1.0	3.1	<2.0	<1.0	<1.0	3.3	7.69	4887.61
BH19	8/20/2021	4.1	<1.0	7.5	<2.0	3.8	1.2	7.0	8.31	4886.25
BH19	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.83	4883.73
BH19	2/1/2022	2.6	<1.0	5.1	<2.0	2.2	1.9	2.0	10.80	4883.76
BH19	5/16/2022	2.1	<1.0	2.4	<2.0	<1.0	<1.0	<1.0	10.75	4883.81
BH19	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	1.4	<1.0	11.16	4883.40
BH19	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.37	4883.19
BH20	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.02	4884.29
BH20	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.35	4886.96
BH20	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.09	4886.46
BH20	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.69	4883.86
BH20	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.65	4883.90
BH20	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.70	4883.85
BH20	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.03	4883.52
BH20	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.19	4883.36
BH21R	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.38	4888.14
BH21R	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.10	4891.42
BH21R	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.01	4885.85
BH21R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.06	4883.80
BH21R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.21	4883.65
BH21R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.20	4884.66
BH21R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.34	4884.52
BH21R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.14	4883.72
BH22R	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.17	4887.02
BH22R	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.42	4891.77
BH22R	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.95	4886.57
BH22R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.71	4883.81

**TABLE 1**  
**FORMER OLANDER U14-14 WELLHEAD**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	<b>-</b>	<b>-</b>
BH22R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.65	4883.87
BH22R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.70	4883.82
BH22R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.06	4883.46
BH22R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.23	4883.29
BH24R2	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.09	4884.42
BH24R2	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.48	4888.03
BH24R2	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.17	4886.64
BH24R2	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.53	4885.28
BH24R2	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.20	4883.61
BH24R2	5/16/2022	<1.0	<1.0	<1.0	<2.0	2.1	<1.0	<1.0	8.81	4885.00
BH24R2	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.51	4885.30
BH24R2	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.72	4883.09
BH25R	2/15/2021	<1.0	<1.0	<1.0	3.2	<1.0	1.8	<1.0	8.54	4885.51
BH25R	5/14/2021	17	<1.0	25	63	4.6	22	7.3	5.57	4888.48
BH25R	8/20/2021	4.7	<1.0	7.2	34	2.4	8.4	<1.0	7.37	4885.94
BH25R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.59	4883.72
BH25R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	1.1	<1.0	9.77	4883.54
BH25R	5/16/2022	4.6	<1.0	<1.0	3.8	<1.0	<1.0	<1.0	9.56	4883.75
BH25R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	3.8	<1.0	10.03	4883.28
BH25R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.39	4882.92
BH26R	2/15/2021	<1.0	<1.0	<1.0	7.9	2.4	15	19	10.74	4883.97
BH26R	5/14/2021	<1.0	<1.0	<1.0	4.4	4.6	4.6	10	8.15	4886.56
BH26R	8/20/2021	<1.0	<1.0	1.2	7.5	<1.0	13	8.6	8.13	4885.84
BH26R	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.50	4883.47
BH26R	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.45	4883.52
BH26R	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.50	4883.47
BH26R	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.87	4883.10
BH26R	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.03	4882.94
BH27	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.95	4883.83
BH27	5/14/2021	3.1	<1.0	10	13	4.0	15	15	8.24	4886.54
BH27	8/20/2021	4.4	<1.0	2.4	5.7	3.6	4.5	8.2	7.95	4886.03
BH27	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.46	4883.52
BH27	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.41	4883.57
BH27	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.49	4883.49
BH27	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.87	4883.11
BH27	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	1.1	<1.0	10.99	4882.99
BH28	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.92	4884.33
BH28	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.27	4886.98
BH28	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.98	4886.54
BH28	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.63	4883.89
BH28	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.58	4883.94
BH28	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.61	4883.91
BH28	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.96	4883.56
BH28	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.14	4883.38
BH29	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	11.20	4883.98
BH29	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.32	4887.86
BH29	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.76	4888.70
BH29	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.13	4887.33
BH29	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.48	4884.98
BH29	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.60	4883.86
BH29	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.29	4884.17
BH29	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.44	4884.02



**TABLE 1**  
**FORMER OLANDER U14-14 WELLHEAD**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	<b>-</b>	<b>-</b>
BH30	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.56	4883.93
BH30	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.87	4886.62
BH30	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.07	4892.71
BH30	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.29	4883.49
BH30	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.23	4883.55
BH30	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.28	4883.50
BH30	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.64	4883.14
BH30	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.81	4882.97
BH31	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.90	4884.11
BH31	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.24	4886.77
BH31	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.41	4889.93
BH31	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.64	4883.70
BH31	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.54	4883.80
BH31	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.65	4883.69
BH31	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.39	4883.95
BH31	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.17	4883.17
BH32	2/15/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.10	4883.86
BH32	5/14/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.46	4886.50
BH32	8/20/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.20	4887.03
BH32	11/3/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.80	4884.43
BH32	2/1/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.74	4884.49
BH32	5/16/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.80	4884.43
BH32	8/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.23	4884.00
BH32	11/9/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.36	4883.87

Notes:

- Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.
- Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

TMB = Trimethylbenzene

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

ft. = Feet

LNAPL = Light non-aqueous phase liquid

AMSL = Above Mean Sea Level

**BOLD** = Analytical result is in exceedance of applicable standard.

**TABLE 2**  
**OLANDER U14-14 WELLHEAD**  
**EFR / AS OPERATIONAL SUMMARY TABLE**

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)	Average Air Flow Rate (cfm)	Approximate LNAPL Recovered <sup>(1)</sup> (oz)
Third Quarter 2020							
8/26/2020	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	10	N/A
9/10/2020		6	84		10	10	12
9/23/2020		6	25		10	10	10
Quarterly Totals		18	109		-	-	22
Forth Quarter 2020							
10/8/2020	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	10	32
10/23/2020		6	0		10	10	32
11/5/2020		6	25		10	10	40
12/1/2020		4	0		10	10	0
12/17/2020		6	0		10	10	36
Quarterly Totals		28	25		-	-	140
First Quarter 2021							
1/4/2021	BH05R, BH10, BH12, BH13, BH14, BH15R	6	5	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	10	0
1/25/2021		6	0		10	9	6.5
2/22/2021		6	0		10	10	8
3/8/2021		6	0		10	10	24
3/23/2021		6	42		10	15	12
Quarterly Totals		30	47		-	-	50.5
Second Quarter 2021							
4/5/2021	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	15	8
4/19/2021		6	0		10	15	10
5/5/2021		6	0		10	15	8
5/17/2021		6	0		10	15	16
6/4/2021		6	0		10	15	10
6/14/2021		6	0		10	15	14
6/30/2021		6	0		10	15	12
Quarterly Totals		42	0		-	-	78
Third Quarter 2021							
7/26/2021	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	10	1
8/11/2021		6	0		10	10	2
9/8/2021		6	0		10	10	2.5
9/20/2021		6	0		10	14	3
Quarterly Totals		24	0		-	-	8.5
Fourth Quarter 2021							
10/4/2021	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	12	3
10/26/2021		6	0		10	8	3
10/31/2021		6	0		10	15.2	2
11/15/2021		6	0		10	17	4
12/2/2021		6	0		10	10	2
12/16/2021		6	0		10	10	4
Quarterly Totals		36	0		-	-	18.0
First Quarter 2022							
1/10/2022	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	10	3.5
1/20/2022		6	0		10	16.1	5
2/16/2022		6	0		10	19.7	4
3/2/2022		6	0		10	20	6
3/18/2022		6	0		10	18.8	4
3/28/2022		6	0		10	10.0	3
Quarterly Totals		36	0		-	-	25.5

**TABLE 2**  
**OLANDER U14-14 WELLHEAD**  
**EFR / AS OPERATIONAL SUMMARY TABLE**

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)	Average Air Flow Rate (cfm)	Approximate LNAPL Recovered <sup>(1)</sup> (oz)
Second Quarter 2022							
4/11/2022	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	10	1
5/13/2022	None	6	0		10	5	0
6/2/2022	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0		10	20.8	0
6/24/2022		6	0		10	20.3	0
Quarterly Totals		24	0		-	-	1.0
Third Quarter 2022							
7/8/2022	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	19.8	0
7/18/2022		6	0		10	19.8	0
8/4/2022		6	0		10	21.7	0
8/31/2022		6	0		10	21.5	0
9/16/2022		6	0		10	22.3	0
9/29/2022		6	0		10	20.3	0
Quarterly Totals		36	0		-	-	0.0
Fourth Quarter 2022							
10/13/2022	BH05R, BH10, BH12, BH13, BH14, BH15R	6	0	BH04R2, BH08R, BH11, BH17, BH18, BH27	10	21.2	0
10/28/2022		6	0		10	20.3	0
11/12/2022		6	0		10	19.5	0
11/30/2022		6	42		10	19.8	12.5
Quarterly Totals		24	42		-	-	12.5
Grand Total		298	223		-	-	356

**Notes:**

EFR = Enhanced fluid recovery

AS = Air sparge

psi = Pounds per square inch

cfm = Cubic feet per minute



## Attachment A

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 07, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Olander U14-14 Wellhead

Work Order #2211177

Enclosed are the results of analyses for samples received by Summit Scientific on 11/09/22 17:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Mikayla Axtell".

Mikayla Axtell For Paul Shrewsbury  
President



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

Project: Olander U14-14 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02R	2211177-01	Water	11/09/22 11:09	11/09/22 17:15
BH03R	2211177-02	Water	11/09/22 11:15	11/09/22 17:15
BH04R2	2211177-03	Water	11/09/22 11:20	11/09/22 17:15
BH05R	2211177-04	Water	11/09/22 12:25	11/09/22 17:15
BH06R	2211177-05	Water	11/09/22 13:13	11/09/22 17:15
BH07R	2211177-06	Water	11/09/22 13:08	11/09/22 17:15
BH08R	2211177-07	Water	11/09/22 11:47	11/09/22 17:15
BH10	2211177-08	Water	11/09/22 12:30	11/09/22 17:15
BH11	2211177-09	Water	11/09/22 11:41	11/09/22 17:15
BH12	2211177-10	Water	11/09/22 11:33	11/09/22 17:15
BH13	2211177-11	Water	11/09/22 11:18	11/09/22 17:15
BH14	2211177-12	Water	11/09/22 12:35	11/09/22 17:15
BH16R	2211177-13	Water	11/09/22 13:22	11/09/22 17:15
BH17	2211177-14	Water	11/09/22 11:08	11/09/22 17:15
BH18	2211177-15	Water	11/09/22 11:11	11/09/22 17:15
BH19	2211177-16	Water	11/09/22 11:03	11/09/22 17:15
BH20	2211177-17	Water	11/09/22 10:59	11/09/22 17:15
BH21R	2211177-18	Water	11/09/22 11:41	11/09/22 17:15
BH22R	2211177-19	Water	11/09/22 11:33	11/09/22 17:15
BH24R2	2211177-20	Water	11/09/22 12:57	11/09/22 17:15
BH25R	2211177-21	Water	11/09/22 13:06	11/09/22 17:15
BH26R	2211177-22	Water	11/09/22 12:51	11/09/22 17:15
BH27	2211177-23	Water	11/09/22 11:40	11/09/22 17:15
BH28	2211177-24	Water	11/09/22 11:30	11/09/22 17:15
BH29	2211177-25	Water	11/09/22 10:58	11/09/22 17:15
BH30	2211177-26	Water	11/09/22 11:23	11/09/22 17:15
BH31	2211177-27	Water	11/09/22 11:21	11/09/22 17:15

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: Olander U14-14 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH32	2211177-28	Water	11/09/22 12:59	11/09/22 17:15

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

S<sub>2</sub>



2211177.1

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 3

Client: PDC/Tasman	Project Manager: Mark Longhurst
Address: 6855 W 119th Ave	E-Mail: Mark.longhurst@pdce.com
City/State/Zip: Broomfield CO 80020	
Phone: 303-487-1228	Project Name: Olander U 14-14 Wellhead
Sampler Name: Chase Jonjak	Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH-(C6-C36)	TMBS(1,2,4)&(1,3,5)	Boron - HWS	pH, EC, SAR	PAH - 915	Metals - 915	
1	BH02R	11/9/2022	1109	3	X				X				X		X					
2	BH03R		1115																	
3	BH04R2		1120																	
4	BH05R		1226																	
5	BH06R		1313																	
6	BH07R		1308																	
7	BH08R		1147																	
8	BH10		1230																	
9	BH11		1141																	
10	BH12		1133																	

Relinquished by: 	Date/Time: 11/9/2022 1435	Received by: Tasman Lockbox	Date/Time: 11/9/2022 1435	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ <b>Sample Integrity:</b> Temperature Upon Receipt: 9.1 Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: Tasman Lockbox	Date/Time: 11/9/2022 1715	Received by: 	Date/Time: 11/9/2022 1715		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Summit Scientific

S<sub>2</sub>

2211177.2

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303-277-9310 ♦ 303-374-5933 (f)

Page 2 of 3

Client: PDC/Tasman Project Manager: Mark Longhurst

Address: 6855 W 119th Ave E-Mail: Mark.longhurst@pdce.com

City/State/Zip: Broomfield CO 80020

Phone: 303-487-1228

Project Name: Olander U 14-14 wellhead

Sampler Name: Chase Jonjak

Project Number:

					Preservative				Matrix				Analysis Requested								Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN -8260B	TPH-(C6-C36)	TMB's(1,2,4)&(1,3,5)	Boron - HWS	pH, EC, SAR	PAH - 915	Metals - 915			
1	BH13	11/9/2022	1118	3	X				X				X		X							
2	BH14	11/9/2022	1235	3	X				X				X		X							
3	<del>BH15R</del> CJ																					
4	BH16R	11/9/2022	1322	3	X				X				X		X							
5	BH17		1108																			
6	BH18		1111																			
7	BH19		1103																			
8	BH20		1059																			
9	BH21R		1141																			
10	BH22R		1133																			

Relinquished by: <u>Chase Jonjak</u>	Date/Time: <u>11/9/2022 1435</u>	Received by: <u>Tasman Lockbox</u>	Date/Time: <u>11/9/2022 1435</u>	<b>Turn Around Time</b> (Check) 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"/> <b>Sample Integrity:</b> Temperature Upon Receipt: <u>9.1</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: <u>Tasman Lockbox</u>	Date/Time: <u>11/9/2022 1715</u>	Received by: <u>[Signature]</u>	Date/Time: <u>11/9/2022 1715</u>		
Relinquished by:	Date/Time:	Received by:	Date/Time:		



# Summit Scientific

S<sub>2</sub>

2211177.3

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Page 3 of 3

Client: PDC/Tasman

Project Manager: Mark Longhurst

Address: 6855 W 119th Ave

E-Mail: Mark.longhurst@pdce.com

City/State/Zip: Broomfield CO 80020

Phone: 303-487-1228

Project Name: Olander v 14-14 Wellhead

Sampler Name: Chase Jonjak

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN -8260B	TPH-(C6-C36)	EMBS(1,2,4)&(1,3,5)	Boron - HWS	pH, EC, SAR	PAH - 915	Metals - 915			
1	BH24R2	11/9/2022	1257	3	X				X					X		X						
2	BH25R		1306																			
3	BH26R		1251																			
4	BH27		1140																			
5	BH28		1130																			
6	BH29		1058																			
7	BH30		1123																			
8	BH31		1121																			
9	BH32		1259																			
10																						

Relinquished by: Chase Jonjak	Date/Time: 11/9/2022 1435	Received by: Tasman Lockbox	Date/Time: 11/9/2022 1435	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____	Notes:
Relinquished by: Tasman Lockbox	Date/Time: 11/9/22 1715	Received by: 	Date/Time: 11/9/22 1715	Sample Integrity: Temperature Upon Receipt: 9.1	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S<sub>2</sub>

3/3

## Sample Receipt Checklist

S2 Work Order# 221177Client: Pocktasman Client Project ID: Olander V14-14 wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: \_\_\_\_\_
☐ ☐ ☐ ☐ ☐
Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☒ Other ☐Temp (°C) 9.1Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? <sup>(1)</sup> <b>NOTE:</b> If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
If custody seals are present, are they intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? <sup>(1)</sup> Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Custodian Printed Name

Date/Time

11-9-22178



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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH02R**  
**2211177-01 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:09**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 11:09**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	8.00	60.0 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	88.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.13	68.5 %		21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH03R**  
**2211177-02 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.53	64.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.9	89.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.1	75.7 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH04R2**  
**2211177-03 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	7.77	58.3 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	87.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.16	68.7 %		21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH05R**  
**2211177-04 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>8.0</b>	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.13	61.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.0	89.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.2	76.8 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH06R**  
**2211177-05 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 13:13**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 13:13**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.89	59.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	87.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.36	70.2 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH07R**  
**2211177-06 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 13:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 13:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	8.42	63.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	11.6	86.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	8.92	66.9 %		21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH08R**  
**2211177-07 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.93	59.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	88.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.77	73.3 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH10**  
**2211177-08 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>36</b>	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>20</b>	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>6.4</b>	2.0		"	"	"	"	"	"	
<b>Naphthalene</b>	<b>1.4</b>	1.0		"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>16</b>	1.0		"	"	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>1.5</b>	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	7.92	59.4 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>	12.1	90.5 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	10.6	79.3 %		21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH11**  
**2211177-09 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:41**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 11:41**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	8.02	60.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.0	89.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.81	73.6 %		21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH12**  
**2211177-10 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 11:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	8.03	60.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.37	70.3 %		21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH13**  
**2211177-11 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.5	101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.9	96.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.8	119 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH14**  
**2211177-12 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>7.3</b>	1.0		ug/l	1	BFK0316	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>40</b>	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>140</b>	2.0		"	"	"	"	"	"	
<b>Naphthalene</b>	<b>36</b>	1.0		"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>110</b>	1.0		"	"	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>98</b>	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	8.20	61.5 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.1	90.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	11.6	87.2 %		21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH16R**  
**2211177-13 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 13:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 13:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.04	60.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	11.0	82.8 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH17**  
**2211177-14 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.66	57.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.1	90.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.6	79.6 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH18**  
**2211177-15 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.89	59.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.1	90.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.5	78.5 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH19**  
**2211177-16 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.91	59.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.1	90.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.5	78.9 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH20**  
**2211177-17 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	7.84	58.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.23	69.2 %		21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH21R**  
**2211177-18 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.43	63.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.9	89.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.63	72.2 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH22R**  
**2211177-19 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.84	58.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.9	89.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.1	76.1 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH24R2**  
**2211177-20 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 12:57**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0316	11/11/22	11/13/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 12:57**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.20	61.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.2	76.8 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH25R**  
**2211177-21 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 13:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 13:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.97	59.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	87.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.44	70.8 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH26R**  
**2211177-22 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.01	60.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	87.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.0	75.4 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH27**  
**2211177-23 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>1.1</b>	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	8.65	64.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.78	73.4 %	21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH28**  
**2211177-24 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/09/22 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	7.75	58.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.95	74.6 %		21-167		"	"	"	"	

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: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH29**  
**2211177-25 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 10:58**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 10:58**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.73	58.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.71	72.8 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH30**  
**2211177-26 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.89	59.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.7	87.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.81	73.6 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH31**  
**2211177-27 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 11:21**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 11:21**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.99	59.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	7.66	57.5 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**BH32**  
**2211177-28 (Water)**

**Summit Scientific**

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

Date Sampled: **11/09/22 12:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFK0315	11/11/22	11/14/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/09/22 12:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	7.87	59.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	11.8	88.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	9.56	71.7 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

## 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 BFK0315 - EPA 5030 Water MS

##### Blank (BFK0315-BLK1)

Prepared: 11/11/22 Analyzed: 11/14/22

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	7.88		"	13.3		59.1	23-173			
Surrogate: Toluene-d8	11.8		"	13.3		88.9	20-170			
Surrogate: 4-Bromofluorobenzene	9.86		"	13.3		74.0	21-167			

##### LCS (BFK0315-BS1)

Prepared: 11/11/22 Analyzed: 11/14/22

Benzene	39.5	1.0	ug/l	33.3		118	51-132			
Toluene	39.5	1.0	"	33.3		118	51-138			
Ethylbenzene	42.5	1.0	"	33.3		127	58-146			
m,p-Xylene	87.9	2.0	"	66.7		132	57-144			
o-Xylene	43.8	1.0	"	33.3		131	53-146			
Naphthalene	31.2	1.0	"	33.3		93.7	70-130			
1,2,4-Trimethylbenzene	37.4	1.0	"	33.3		112	70-130			
1,3,5-Trimethylbenzene	41.3	1.0	"	33.3		124	70-130			
Surrogate: 1,2-Dichloroethane-d4	8.05		"	13.3		60.4	23-173			
Surrogate: Toluene-d8	12.2		"	13.3		91.1	20-170			
Surrogate: 4-Bromofluorobenzene	10.6		"	13.3		79.2	21-167			

##### Matrix Spike (BFK0315-MS1)

Source: 2211177-21

Prepared: 11/11/22 Analyzed: 11/14/22

Benzene	39.3	1.0	ug/l	33.3	ND	118	34-141			
Toluene	39.8	1.0	"	33.3	ND	120	27-151			
Ethylbenzene	42.4	1.0	"	33.3	ND	127	29-160			
m,p-Xylene	88.2	2.0	"	66.7	ND	132	20-166			
o-Xylene	43.9	1.0	"	33.3	ND	132	33-159			
Naphthalene	28.1	1.0	"	33.3	ND	84.2	70-130			
1,2,4-Trimethylbenzene	38.7	1.0	"	33.3	ND	116	70-130			
1,3,5-Trimethylbenzene	41.8	1.0	"	33.3	ND	125	70-130			
Surrogate: 1,2-Dichloroethane-d4	7.86		"	13.3		59.0	23-173			
Surrogate: Toluene-d8	12.1		"	13.3		90.8	20-170			
Surrogate: 4-Bromofluorobenzene	10.6		"	13.3		79.4	21-167			

Summit Scientific

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

Project: Olander U14-14 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

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

### Summit Scientific

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

#### Batch BFK0315 - EPA 5030 Water MS

Matrix Spike Dup (BFK0315-MSD1)			Source: 2211177-21		Prepared: 11/11/22 Analyzed: 11/14/22					
Benzene	39.4	1.0	ug/l	33.3	ND	118	34-141	0.356	30	
Toluene	40.2	1.0	"	33.3	ND	121	27-151	0.949	30	
Ethylbenzene	42.6	1.0	"	33.3	ND	128	29-160	0.494	30	
m,p-Xylene	88.4	2.0	"	66.7	ND	133	20-166	0.260	30	
o-Xylene	44.0	1.0	"	33.3	ND	132	33-159	0.182	30	
Naphthalene	30.1	1.0	"	33.3	ND	90.2	70-130	6.88	30	
1,2,4-Trimethylbenzene	38.9	1.0	"	33.3	ND	117	70-130	0.696	30	
1,3,5-Trimethylbenzene	42.1	1.0	"	33.3	ND	126	70-130	0.668	30	
Surrogate: 1,2-Dichloroethane-d4	8.07		"	13.3		60.5	23-173			
Surrogate: Toluene-d8	12.2		"	13.3		91.7	20-170			
Surrogate: 4-Bromofluorobenzene	10.6		"	13.3		79.1	21-167			

#### Batch BFK0316 - EPA 5030 Water MS

Blank (BFK0316-BLK1)			Prepared: 11/11/22 Analyzed: 11/13/22							
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	8.02		"	13.3		60.2	23-173			
Surrogate: Toluene-d8	11.6		"	13.3		87.4	20-170			
Surrogate: 4-Bromofluorobenzene	8.88		"	13.3		66.6	21-167			

LCS (BFK0316-BS1)			Prepared: 11/11/22 Analyzed: 11/13/22							
Benzene	39.1	1.0	ug/l	33.3		117	51-132			
Toluene	39.2	1.0	"	33.3		118	51-138			
Ethylbenzene	41.7	1.0	"	33.3		125	58-146			
m,p-Xylene	85.8	2.0	"	66.7		129	57-144			
o-Xylene	43.4	1.0	"	33.3		130	53-146			
Naphthalene	38.5	1.0	"	33.3		116	70-130			
1,2,4-Trimethylbenzene	34.7	1.0	"	33.3		104	70-130			
1,3,5-Trimethylbenzene	39.1	1.0	"	33.3		117	70-130			
Surrogate: 1,2-Dichloroethane-d4	7.98		"	13.3		59.9	23-173			
Surrogate: Toluene-d8	12.1		"	13.3		90.6	20-170			
Surrogate: 4-Bromofluorobenzene	9.99		"	13.3		74.9	21-167			

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

Project: Olander U14-14 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

**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 BFK0316 - EPA 5030 Water MS**

**Matrix Spike (BFK0316-MS1)**

Source: 2211177-01

Prepared: 11/11/22 Analyzed: 11/13/22

Benzene	39.9	1.0	ug/l	33.3	ND	120	34-141		
Toluene	39.7	1.0	"	33.3	ND	119	27-151		
Ethylbenzene	41.8	1.0	"	33.3	ND	125	29-160		
m,p-Xylene	87.1	2.0	"	66.7	ND	131	20-166		
o-Xylene	44.2	1.0	"	33.3	ND	133	33-159		
Naphthalene	33.6	1.0	"	33.3	ND	101	70-130		
1,2,4-Trimethylbenzene	35.7	1.0	"	33.3	ND	107	70-130		
1,3,5-Trimethylbenzene	40.0	1.0	"	33.3	ND	120	70-130		
Surrogate: 1,2-Dichloroethane-d4	8.20		"	13.3		61.5	23-173		
Surrogate: Toluene-d8	12.2		"	13.3		91.2	20-170		
Surrogate: 4-Bromofluorobenzene	10.2		"	13.3		76.7	21-167		

**Matrix Spike Dup (BFK0316-MSD1)**

Source: 2211177-01

Prepared: 11/11/22 Analyzed: 11/13/22

Benzene	39.8	1.0	ug/l	33.3	ND	120	34-141	0.150	30
Toluene	40.2	1.0	"	33.3	ND	121	27-151	1.38	30
Ethylbenzene	41.8	1.0	"	33.3	ND	125	29-160	0.167	30
m,p-Xylene	86.2	2.0	"	66.7	ND	129	20-166	1.03	30
o-Xylene	43.6	1.0	"	33.3	ND	131	33-159	1.44	30
Naphthalene	34.8	1.0	"	33.3	ND	104	70-130	3.45	30
1,2,4-Trimethylbenzene	35.6	1.0	"	33.3	ND	107	70-130	0.196	30
1,3,5-Trimethylbenzene	40.2	1.0	"	33.3	ND	121	70-130	0.698	30
Surrogate: 1,2-Dichloroethane-d4	8.09		"	13.3		60.7	23-173		
Surrogate: Toluene-d8	12.3		"	13.3		92.0	20-170		
Surrogate: 4-Bromofluorobenzene	9.78		"	13.3		73.4	21-167		

Summit Scientific

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

Project: Olander U14-14 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
12/07/22 09:49

### 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