



PDC Energy, Inc.
Third Quarter 2022 Groundwater Monitoring Summary

October 6, 2022

Former Churchill 5 Wellhead
NENW Section 28 T5N R64W
Remediation # 20066

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Churchill 5 wellhead location.

Site History and Background

On October 10, 2021, groundwater was encountered within the former wellhead excavation at approximately 6 feet below ground surface (bgs) during wellhead decommissioning activities. Analytical results received from the groundwater sample (GW05) collected from the base of the excavation indicated that the benzene concentration was in exceedance of the applicable COGCC Table 915-1 regulatory standards. No impacted soil was identified or removed during decommissioning activities.

Monitoring Well Installation Activities

On August 12, 2022, five monitoring wells (BH01 – BH05) were installed to delineate dissolved-phase hydrocarbon impacts within and adjacent to the former excavation extent (Figure 1). Lithologic descriptions and volatile organic compound (VOC) concentrations, measured using a photoionization detector (PID), were recorded for each borehole.

One soil sample was collected from each soil boring (BH01 – BH05) at the interval exhibiting the highest VOC concentration. Due to staining and elevated PID readings observed in monitoring well BH01, one sample was also collected from clean material beneath the elevated readings. Six soil samples were collected at depths ranging from approximately 5 feet to 10 feet bgs and were submitted to Summit Scientific Laboratory for analysis of the full Table 915-1 analytical suite.

Soil analytical results indicated that organic compound concentrations, pH, electrical conductivity (EC), sodium adsorption ratio (SAR), and boron were in compliance with the applicable COGCC Table 915-1 regulatory standards in all monitoring well locations. Arsenic and selenium concentrations were in exceedance of the applicable regulatory standards in all monitoring well locations. Additionally, the barium concentration was in exceedance of the applicable regulatory standard in monitoring well BH03.

In addition, three background soil borings (BKG02 – BKG04) were advanced to a depth of approximately 6 feet bgs in native material surrounding the former wellhead location. Six samples were collected at depths of approximately 3 feet and 6 feet bgs and were submitted for laboratory analysis of the Table 915-1 metals suite.

Background analytical results indicated that arsenic and selenium concentrations were in exceedance of the applicable COGCC Table 915-1 regulatory standards in native soil on site. Based on these results, the arsenic and selenium concentrations recorded in soil samples collected from monitoring well BH01 are below or within 1.25x the background concentrations of background soil samples collected from similar depths. Additionally, based on the location of the point of compliance (POC) monitoring wells (BH02 – BH05), and the absence of organic compound detections or elevated EC and SAR, the arsenic, barium, and selenium concentrations recorded in these monitoring wells are representative of native soil conditions. The monitoring well and background soil boring locations are illustrated on Figure 1. Soil analytical results are summarized in Tables 1 – 4. The GPS coordinates and field observed VOC concentrations are summarized in Table 5. The laboratory analytical report is included in Attachment A. The boring and well completion logs are included in Attachment B.

Groundwater Monitoring Activities

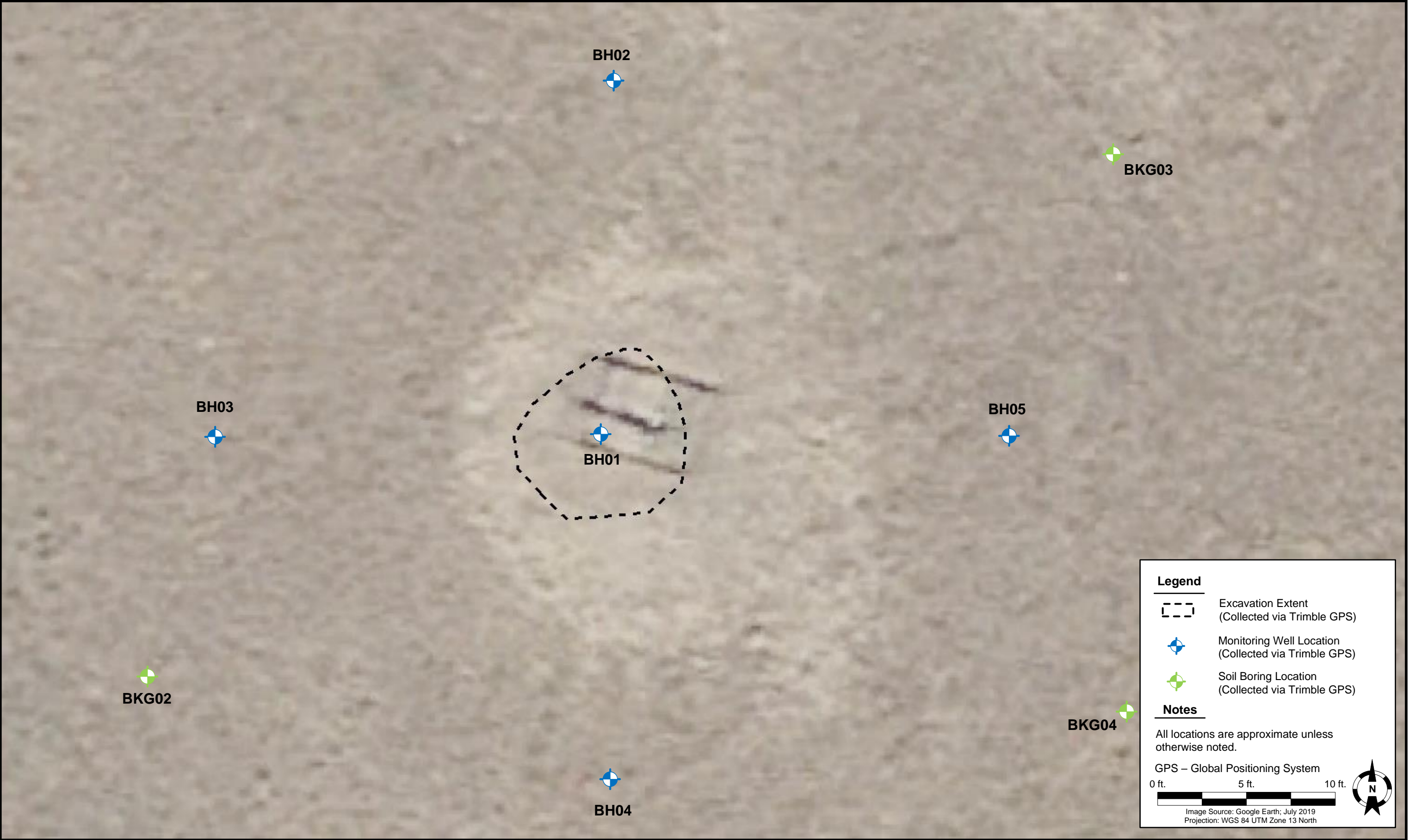
On September 14, 2022, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B, chloride and sulfate anions by EPA Method 300.0, and total dissolved solids (TDS) by Method SM 2540C.

Third quarter 2022 analytical results indicated that organic compound concentrations were in compliance with the applicable COGCC Table 915-1 regulatory standards in all five monitoring well locations. Additionally, inorganic parameters were in compliance with the applicable regulatory standards or within 1.25x the background concentrations of the up- and cross-gradient monitoring wells (BH03 and BH04) in all monitoring well locations. Sample locations and corresponding analytical results are illustrated on Figures 2 and 3. Groundwater elevation data is illustrated on Figure 4. Groundwater analytical results are summarized in Tables 6 and 7. The laboratory analytical report is included in Attachment A.

Current Remediation Activities and Path Forward

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the third quarter 2022 and will remain the selected remediation strategy through the fourth quarter 2022.

Fourth quarter 2022 groundwater sampling will be conducted in December 2022.



DATE:	October 5, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	J. Marcus



Tasman, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former Churchill 5 Wellhead
NENW and NWNW, Section 28, Township 5 North, Range 64 West
Weld County, Colorado

**MONITORING WELL
AND SOIL BORING
LOCATION MAP**

**FIGURE
1**

BH02	
Compound (µg/L)	9/14/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	7.39

BH01	
Compound (µg/L)	9/14/2022
Benzene	2.5
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	6.93

BH03	
Compound (µg/L)	9/14/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	6.76

BH04	
Compound (µg/L)	9/14/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	7.06

BH05	
Compound (µg/L)	9/14/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	6.85

Legend

- Excavation Extent (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (3Q22)
- Groundwater Sample Location (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)

Notes

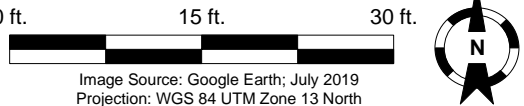
All locations are approximate unless otherwise noted.

µg/L – Micrograms per liter

TMB – Trimethylbenzene

ft. bgs – Feet below ground surface

GPS – Global Positioning System



DATE:	October 6, 2022
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DRAWN BY:	J. Marcus



TASMAN
Tasman, Inc.
6855 W. 119th Ave
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former Churchill 5 Wellhead
NENW, Section 28, Township 5 North, Range 64 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP

BH02	
Compound (mg/L)	9/14/2022
Chloride	231
Sulfate	514
TDS	1,200
Depth to Water (ft. bgs)	7.39

BH01	
Compound (mg/L)	9/14/2022
Chloride	221
Sulfate	489
TDS	1,220
Depth to Water (ft. bgs)	6.93

BH03	
Compound (mg/L)	9/14/2022
Chloride	270
Sulfate	611
TDS	1,200
Depth to Water (ft. bgs)	6.76

BH05	
Compound (mg/L)	9/14/2022
Chloride	220
Sulfate	512
TDS	1,200
Depth to Water (ft. bgs)	6.85

BH04	
Compound (mg/L)	9/14/2022
Chloride	238
Sulfate	540
TDS	1,160
Depth to Water (ft. bgs)	7.06

Legend

- Excavation Extent (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (3Q22)
- Groundwater Sample Location (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)

Notes

All locations are approximate unless otherwise noted.

mg/L – Milligrams per liter

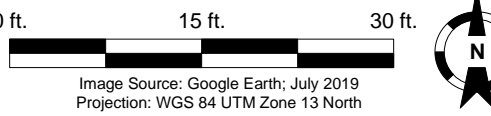
TDS – Total dissolved solids

ft. bgs – Feet below ground surface

GPS – Global Positioning System

Black bold text denotes an exceedance of COGCC regulatory standards but within 1.25x the background concentration

COGCC – Colorado Oil and Gas Conservation Commission



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DRAWN BY: J. Marcus

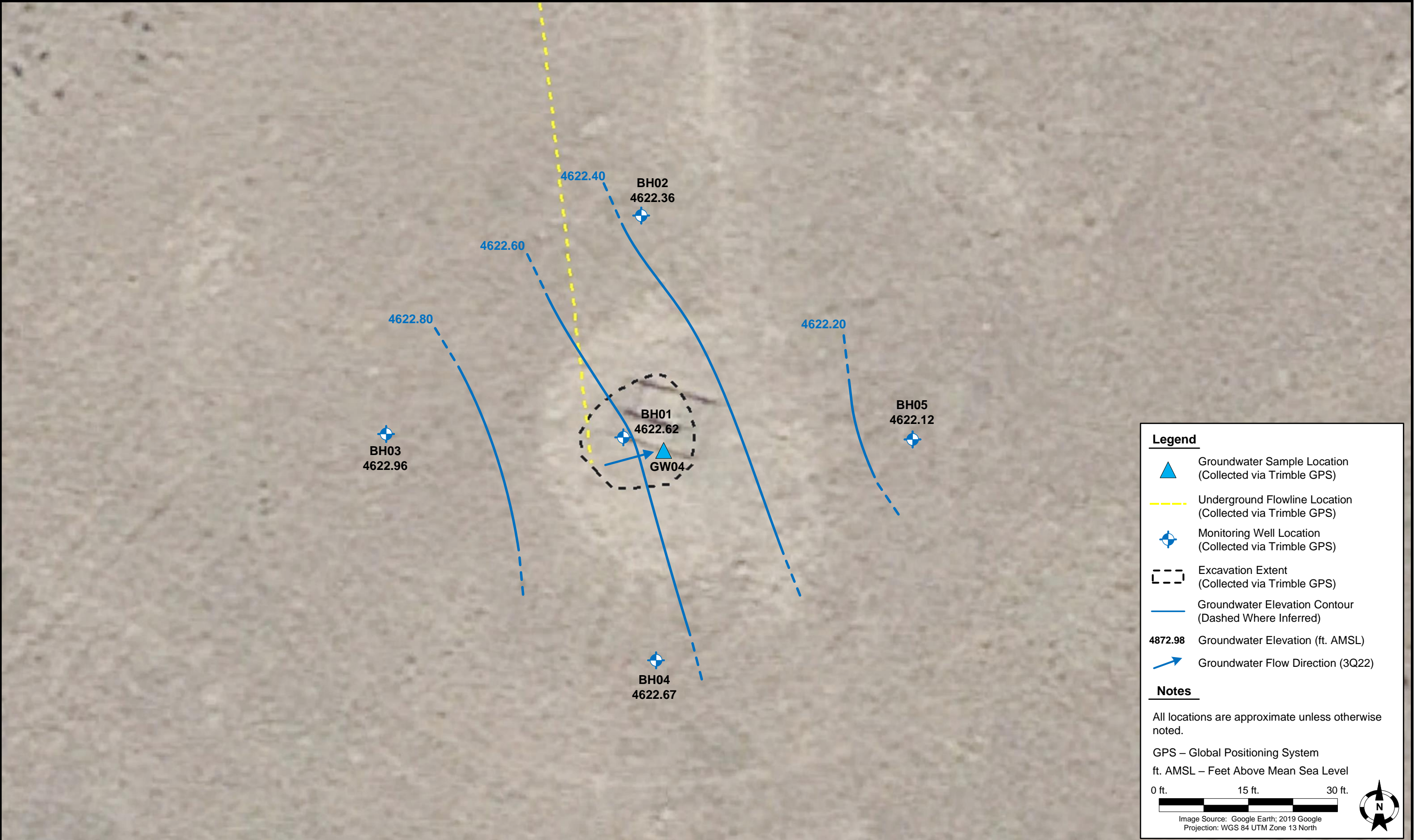


Tasman, Inc.
6855 W. 119th Ave
Broomfield, CO 80020

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Former Churchill 5 Wellhead
NENW, Section 28, Township 5 North, Range 64 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP
(INORGANIC PARAMATERS)

FIGURE
3



DATE:	October 6, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	L. Reed



TASMAN
Tasman, Inc.
6855 W. 119th Ave
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former Churchill 5 Wellhead
NENW, Section 28, Township 5 North, Range 64 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP (09/14/2022)**

**FIGURE
4**

TABLE 1
FORMER CHURCHILL 5 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH ⁽⁴⁾ (mg/kg)
Residential SSL ^(1,2)			1.2	490	5.8	58	30	27	2	500
Protection of Groundwater SSL ^(1,2,3)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500
WH04 @ 6'	10/20/2021	6 ft. bgs	<0.0020	0.025	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FLR04 @ 3'	10/20/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL04-01 @ 3'	10/21/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL04-02 @ 3'	10/21/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL04-03 @ 3'	10/21/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL04-05 @ 3'	10/21/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
BH01 @ 5'	8/12/2022	5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
BH01 @ 7'	8/12/2022	7 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
BH02 @ 7'	8/12/2022	7 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
BH03 @ 8'	8/12/2022	8 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
BH04 @ 10'	8/12/2022	10 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
BH05 @ 8'	8/12/2022	8 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50

Notes:

- Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
 - Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
 - SSLs are applicable if a pathway for communication with groundwater is present.
 - Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.
- COGCC = Colorado Oil and Gas Conservation Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.
TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics
TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics
TEPH-ORO = Total extactable petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
TMB = Trimethylbenzene
ft. = Feet
bgs = Below ground surface
= Source material characterization sample

TABLE 2
FORMER CHURCHILL 5 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC COMPOUNDS

Sample ID	Date Sampled	Depth	pH (units)	EC (mmhos/cm)	SAR (units)	Boron (mg/L)
Soil Suitability for Reclamation Standard ⁽¹⁾			6-8.3	<4	<6	2
WH04 @ 6'	10/20/2021	6 ft. bgs	8.16	0.513	2.01	0.0468
FLR04 @ 3'	10/20/2021	3 ft. bgs	7.60	0.182	0.683	0.0299
BKG01 @ 3'	10/22/2021	3 ft. bgs	7.23	0.0827	0.110	NA
BKG01 @ 6'	10/22/2021	6 ft. bgs	7.58	0.278	1.87	NA
BH01 @ 5'	8/12/2022	5 ft. bgs	7.90	1.78	3.92	0.115
BH01 @ 7'	8/12/2022	7 ft. bgs	7.43	1.01	3.92	0.0766
BH02 @ 7'	8/12/2022	7 ft. bgs	7.75	1.57	4.19	0.0868
BH03 @ 8'	8/12/2022	8 ft. bgs	7.84	1.47	4.38	0.0860
BH04 @ 10'	8/12/2022	10 ft. bgs	7.82	1.48	4.03	0.0772
BH05 @ 8'	8/12/2022	8 ft. bgs	7.83	1.43	4.01	0.0688

Notes:

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.

COGCC = Colorado Oil and Gas Conservation Commission

EC = Electrical conductivity

SAR = Sodium adsorption ratio

mmhos/cm = millimhos per centimeter

mg/L = milligram per liter

ft. = Feet

bgs = Below ground surface

NA = Constituent not analyzed

 = Source material characterization sample

TABLE 3
FORMER CHURCHILL 5 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS - PAHs

Sample ID	Date Sampled	Depth	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ^(1,2)			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^(1,2,3)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
WH04 @ 6'	10/20/2021	6 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FLR04 @ 3'	10/20/2021	3 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01 @ 5'	8/12/2022	5 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01 @ 7'	8/12/2022	7 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH02 @ 7'	8/12/2022	7 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH03 @ 8'	8/12/2022	8 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH04 @ 10'	8/12/2022	10 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH05 @ 8'	8/12/2022	8 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Notes:

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
3. SSLs are applicable if a pathway for communication with
COGCC = Colorado Oil and Gas Conservation Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.

PAHs = Polycyclic aromatic hydrocarbons
Benz(a) = Benzanthracene
Benzo(a) = Benzopyrene
Benzo(b) = Benzofluoranthene
Benzo(k) = Benzofluoranthene
1,2,3-CD = Indenopyrene
M = Methylinaphthalene
mg/kg = Milligrams per kilogram
= Source material characterization sample

ft. = Feet
bgs = Below ground surface

TABLE 4
FORMER CHURCHILL 5 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
METALS

Sample ID	Date Sampled	Depth	Arsenic ⁽⁵⁾ (mg/kg)	Barium ⁽⁶⁾ (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium ⁽⁷⁾ (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL ^(1,2)			0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL ^(1,2,3)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
WH04 @ 6'	10/20/2021	6 ft. bgs	0.810	36.4	<0.226	<0.30 ⁽⁴⁾	5.02	5.92	3.42	0.467	<0.0226	16.9
BH01 @ 5'	8/12/2022	5 ft. bgs	0.733	43.9	<0.219	<0.30	4.70	5.37	3.92	0.463	<0.0219	17.3
BH01 @ 7'	8/12/2022	7 ft. bgs	0.458	37.6	<0.215	<0.30	2.89	3.26	3.07	0.413	<0.0215	13.4
BH02 @ 7'	8/12/2022	7 ft. bgs	0.944	49.2	<0.233	<0.30	4.25	4.27	4.28	0.560	<0.0233	19.3
BH03 @ 8'	8/12/2022	8 ft. bgs	2.55	92.7	<0.243	<0.30	6.19	4.82	5.43	0.576	<0.0243	23.9
BH04 @ 10'	8/12/2022	10 ft. bgs	0.853	72.4	<0.232	<0.30	4.53	4.34	4.69	0.490	<0.0232	19.2
BH05 @ 8'	8/12/2022	8 ft. bgs	0.981	34.6	<0.232	<0.30	3.43	3.03	3.58	0.542	<0.0232	16.0
BKG01 @ 3'	10/22/2021	3 ft. bgs	0.397	NA	NA	NA	NA	NA	NA	0.591	NA	NA
BKG01 @ 6'	10/22/2021	6 ft. bgs	0.492	NA	NA	NA	NA	NA	NA	0.602	NA	NA
BKG02 @ 3'	8/12/2022	3 ft. bgs	0.653	36.5	<0.220	<0.30	3.53	3.46	3.28	0.505	<0.0220	14.6
BKG02 @ 6'	8/12/2022	6 ft. bgs	0.500	41.6	<0.212	<0.30	3.19	3.98	3.18	0.509	<0.0212	15.7
BKG03 @ 3'	8/12/2022	3 ft. bgs	0.672	29.9	<0.203	<0.30	3.72	4.99	3.07	0.429	<0.0203	15.8
BKG03 @ 6'	8/12/2022	6 ft. bgs	0.568	27.5	<0.208	<0.30	3.41	6.21	2.62	0.383	<0.0208	15.1
BKG04 @ 3'	8/12/2022	3 ft. bgs	0.663	39.7	<0.209	<0.30	3.65	3.98	3.41	0.480	<0.0209	15.6
BKG04 @ 6'	8/12/2022	6 ft. bgs	0.592	37.9	<0.207	<0.30	3.12	3.47	2.97	0.424	<0.0207	13.8

Notes:

- Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
- SSLs are applicable if a pathway for communication with groundwater is present.
- Compound falls within COGCC Table 915-1 Footnote 9.
- Based on the location of monitoring wells BH02 - BH05, the arsenic concentrations recorded in samples collected from these monitoring wells are indicative of native material. The highest arsenic exceedance recorded within unsaturated interval (BH01 @ 5' - 0.733 mg/kg) is within 1.25x the background concentrations recorded in the unsaturated interval of background soil borings BKG02 - BKG04. The highest arsenic concentration recorded within the saturated interval (WH04 @ 6' - 0.810 mg/kg) is below background concentrations recorded in the saturated interval of monitoring wells BH02 - BH05.
- Based on the location of monitoring well BH03, and the absence of a barium exceedance in the source characterization sample WH04, the barium concentration recorded in the sample collected from this monitoring well is indicative of native material.
- Based on the location of monitoring wells BH02 - BH05, the selenium concentrations recorded in samples collected from these monitoring wells are indicative of native material. The highest selenium exceedance recorded within unsaturated interval (BH01 @ 5' - 0.463 mg/kg) is below selenium concentrations recorded within the unsaturated interval of background soil borings BKG01 - BKG04. The highest selenium exceedance recorded within the saturated interval (WH04 @ 6' - 0.467 mg/kg) is below background concentrations recorded in the saturated interval of monitoring wells BH02 - BH05 and background soil borings BKG01 and BKG02 and within 1.25x the selenium concentrations recorded in background soil borings BKG03 and BKG04.

COGCC = Colorado Oil and Gas Conservation Commission

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

mg/kg = Milligrams per kilogram

Source material characterization sample

ft. = Feet

in. = Inches

bgs = Below ground surface

BOLD = Analytical result is in exceedance of applicable standard.

BOLD = Analytical result is in exceedance of applicable standard, but within 1.25x background concentration.

NA = Constituent not analyzed

TABLE 5
FORMER CHURCHILL 5 WELLHEAD
FIELD DATA SUMMARY TABLE

Sample ID	Date Sampled	Depth	GPS Data ⁽¹⁾ Latitude / Longitude		PDOP Value	VOC Concentration ⁽²⁾ (ppm)
WH04 @ 6'	10/20/2021	6 ft. bgs	40.374253	-104.559310	1.1	0.2
FLR04 @ 3'	10/20/2021	3 ft. bgs	40.374283	-104.559336	1.2	0.6
FLR04-01 @ 3'	10/21/2021	3 ft. bgs	40.375201	-104.559497	1.1	0.1
FLR04-02 @ 3'	10/21/2021	3 ft. bgs	40.375351	-104.560528	1.1	0.2
FLR04-03 @ 3'	10/21/2021	3 ft. bgs	40.375588	-104.561382	1.0	0.0
FLR01-05 @ 3'	10/21/2021	3 ft. bgs	40.376208	-104.562274	0.9	0.3
BKG01 @ 3'	10/22/2021	3 ft. bgs	40.374346	-104.559507	0.8	0.1
BKG01 @ 6'	10/22/2021	6 ft. bgs	40.374346	-104.559507	0.8	0.0
BH01	8/12/2022	11 ft. bgs	40.374264	-104.559312	1.6	1.4
BH02	8/12/2022	11 ft. bgs	40.374366	-104.559301	1.6	0.1
BH03	8/12/2022	11 ft. bgs	40.374266	-104.559456	1.9	0.1
BH04	8/12/2022	11 ft. bgs	40.374161	-104.559294	1.4	0.2
BH05	8/12/2022	11 ft. bgs	40.374262	-104.559138	1.4	0.2
BKG02	8/12/2022	6 ft. bgs	40.374192	-104.559489	NC	0.1
BKG03	8/12/2022	6 ft. bgs	40.374352	-104.559097	NC	0.1
BKG04	8/12/2022	6 ft. bgs	40.374180	-104.559093	NC	0.0

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.
2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

ft. = Feet

bgs = Below ground surface

NC = Data not collected

 = Source material characterization sample

TABLE 6
FORMER CHURCHILL 5 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 ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	140	67	67	-	-
GW04	10/19/2021	7.1	13	<1.0	11	<1.0	1.3	<1.0	6	NA
BH01	9/14/2022	2.5	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.93	4622.62
BH02	9/14/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.39	4622.36
BH03	9/14/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.76	4622.96
BH04	9/14/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.06	4622.67
BH05	9/14/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.85	4622.12

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

AMSL = Above Mean Sea Level

NA = Not applicable

BOLD = Analytical result in exceedance of applicable COGCC standards

TABLE 7
FORMER CHURCHILL 5 WELLHEAD
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC PARAMETERS

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) (1)		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG	-	-
BH01	9/14/2022	1,220	221	489	6.93	4622.62
BH02	9/14/2022	1,200	231	514	7.39	4622.36
BH03	9/14/2022	1,200	270	611	6.76	4622.96
BH04	9/14/2022	1,160	238	540	7.06	4622.67
BH05	9/14/2022	1,200	220	512	6.85	4622.12

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.

2. 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

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background

mg/L = Milligrams per liter

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

ft. = Feet

AMSL = Above Mean Sea Level

 = Up- / Cross-gradient well locations used for background concentration.

BOLD = Analytical result is in exceedance of applicable COGCC standard but within 1.25x BCKG concentration

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 22, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Churchill 5 Wellhead

Work Order #2208179

Enclosed are the results of analyses for samples received by Summit Scientific on 08/12/22 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BKG02@3'	2208179-01	Soil	08/12/22 13:32	08/12/22 16:00
BKG02@6'	2208179-02	Soil	08/12/22 13:45	08/12/22 16:00
BKG03@3'	2208179-03	Soil	08/12/22 13:57	08/12/22 16:00
BKG03@6'	2208179-04	Soil	08/12/22 14:12	08/12/22 16:00
BKG04@3'	2208179-05	Soil	08/12/22 13:50	08/12/22 16:00
BKG04@6'	2208179-06	Soil	08/12/22 14:29	08/12/22 16:00
BH01@5'	2208179-07	Soil	08/12/22 10:42	08/12/22 16:00
BH01@7'	2208179-08	Soil	08/12/22 10:59	08/12/22 16:00
BH02@7'	2208179-09	Soil	08/12/22 11:11	08/12/22 16:00
BH03@8'	2208179-10	Soil	08/12/22 13:25	08/12/22 16:00
BH04@10'	2208179-11	Soil	08/12/22 12:06	08/12/22 16:00
BH05@8'	2208179-12	Soil	08/12/22 11:31	08/12/22 16:00

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

S₂

2208179.1

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 2

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:	Churchill 5 Wellhead
Sampler Name:	Mike Connolly	Project Number:	N/A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	Metals - 915	PAHs - 915			
1	BK601 @ 3'	8/12/22	1322	1			X			X								X				pH, EC, SAR by saturated paste
2	BK602 @ 6'		1345	1			X			X								X				
3	BK603 @ 3'		1357	1			X			X								X				
4	BK603 @ 6'		1412	1			X			X								X				
5	BK604 @ 3'		1350	1			X			X								X				
6	BK604 @ 6'		1429	1			X			X								X				
7	BH01 @ 6'		1042	3			X			X		X	X	X	X	X	X	X	X			
8	BH01 @ 7'		1059	3			X			X		X	X	X	X	X	X	X	X			
9	BH02 @ 7'		1111	3			X			X		X	X	X	X	X	X	X	X			
10	BH03 @ 8'		1325	3			X			X		X	X	X	X	X	X	X	X			

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes:
	8/12/22 1315	Tasman's Lock Box	8/12/22 1315	Same Day	72 hours	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours	Standard	
Tasman's Lock Box	8/12/22 1600		8/12/22 1600	48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	Temperature Upon Receipt:	
				Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.1	

Summit Scientific

S₂

2208179.2


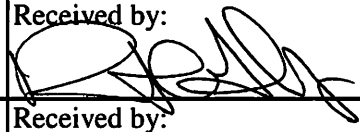
4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 2 of 2

Client: PDC / Tasman
Address: 6855 W 119th Ave
City/State/Zip: Broomfield/ CO/ 80020
Phone: 303-487-1228
Sampler Name: M. Connolly

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@PDCE.com
Project Name: Churchill S wellhead
Project Number: NA

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	PAHS-915	Metals-415		
1	BH04 @ 10'	8/12/22	1206	3			X			X			X	X	X	X	X	X			
2	BH05 @ 8'	1	1131	3			X			X			X	X	X	X	X	X			
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: 	Date/Time: 8/12/22 1319	Received by: Tasman's Lock Box	Date/Time: 8/12/22	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <u>X</u> 48 hours _____ Sample Integrity: Temperature Upon Receipt: <u>8.1</u> Samples Intact: <u>Yes</u> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 8/12/22 1600	Received by: 	Date/Time: 8/12/22 1600		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

2/2
Sample Receipt Checklist

S2 Work Order# 2208179

Client: Pactasman Client Project ID: Churchhill's wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

	-		
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Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 8.1Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ice
Were all samples received intact ⁽¹⁾ ?	-			
Was adequate sample volume provided ⁽¹⁾ ?	-			
If custody seals are present, are they intact ⁽¹⁾ ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	-			
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⁾ ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			-	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.


Custodian Printed Name

8/22/22
Date/Time



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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BKG02@3'
2208179-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **08/12/22 13:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.653	0.220	mg/kg dry	1	BFH0376	08/17/22	08/22/22	EPA 6020B	
Barium	36.5	0.441	"	"	"	"	"	"	
Cadmium	ND	0.220	"	"	"	"	"	"	
Copper	3.53	0.441	"	"	"	"	"	"	
Lead	3.46	0.220	"	"	"	"	"	"	
Nickel	3.28	0.441	"	"	"	"	"	"	
Selenium	0.505	0.286	"	"	"	"	"	"	
Silver	ND	0.0220	"	"	"	"	"	"	
Zinc	14.6	0.441	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 13:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 13:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	90.8		%	1	BFH0319	08/16/22	08/16/22	Calculation	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BKG02@6'
2208179-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **08/12/22 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.500	0.212	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B	
Barium	41.6	0.425	"	"	"	"	"	"	
Cadmium	ND	0.212	"	"	"	"	"	"	
Copper	3.19	0.425	"	"	"	"	"	"	
Lead	3.98	0.212	"	"	"	"	"	"	
Nickel	3.18	0.425	"	"	"	"	"	"	
Selenium	0.509	0.276	"	"	"	"	"	"	
Silver	ND	0.0212	"	"	"	"	"	"	
Zinc	15.7	0.425	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	94.2		%	1	BFH0319	08/16/22	08/16/22	Calculation	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BKG03@3'
2208179-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **08/12/22 13:57**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.672	0.203	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B	
Barium	29.9	0.406	"	"	"	"	"	"	
Cadmium	ND	0.203	"	"	"	"	"	"	
Copper	3.72	0.406	"	"	"	"	"	"	
Lead	4.99	0.203	"	"	"	"	"	"	
Nickel	3.07	0.406	"	"	"	"	"	"	
Selenium	0.429	0.264	"	"	"	"	"	"	
Silver	ND	0.0203	"	"	"	"	"	"	
Zinc	15.8	0.406	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 13:57**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 13:57**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	98.6		%	1	BFH0319	08/16/22	08/16/22	Calculation	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BKG03@6'
2208179-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **08/12/22 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.568	0.208	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B	
Barium	27.5	0.417	"	"	"	"	"	"	
Cadmium	ND	0.208	"	"	"	"	"	"	
Copper	3.41	0.417	"	"	"	"	"	"	
Lead	6.21	0.208	"	"	"	"	"	"	
Nickel	2.62	0.417	"	"	"	"	"	"	
Selenium	0.383	0.271	"	"	"	"	"	"	
Silver	ND	0.0208	"	"	"	"	"	"	
Zinc	15.1	0.417	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	95.9		%	1	BFH0319	08/16/22	08/16/22	Calculation	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BKG04@3'
2208179-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **08/12/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.663	0.209	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B	
Barium	39.7	0.417	"	"	"	"	"	"	
Cadmium	ND	0.209	"	"	"	"	"	"	
Copper	3.65	0.417	"	"	"	"	"	"	
Lead	3.98	0.209	"	"	"	"	"	"	
Nickel	3.41	0.417	"	"	"	"	"	"	
Selenium	0.480	0.271	"	"	"	"	"	"	
Silver	ND	0.0209	"	"	"	"	"	"	
Zinc	15.6	0.417	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	95.8		%	1	BFH0319	08/16/22	08/16/22	Calculation	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BKG04@6'
2208179-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **08/12/22 14:29**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.592	0.207	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B	
Barium	37.9	0.414	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	3.12	0.414	"	"	"	"	"	"	
Lead	3.47	0.207	"	"	"	"	"	"	
Nickel	2.97	0.414	"	"	"	"	"	"	
Selenium	0.424	0.269	"	"	"	"	"	"	
Silver	ND	0.0207	"	"	"	"	"	"	
Zinc	13.8	0.414	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 14:29**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 14:29**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.6		%	1	BFH0319	08/16/22	08/16/22	Calculation	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@5'
2208179-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFH0332	08/16/22	08/17/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		92.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		91.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.3 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFH0334	08/16/22	08/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@5'
2208179-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFH0308	08/16/22	08/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		76.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		76.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.115	0.0100	mg/L	1	BFH0310	08/16/22	08/16/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@5'
2208179-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.733	0.219	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B
Barium	43.9	0.439	"	"	"	"	"	"
Cadmium	ND	0.219	"	"	"	"	"	"
Copper	4.70	0.439	"	"	"	"	"	"
Lead	5.37	0.219	"	"	"	"	"	"
Nickel	3.92	0.439	"	"	"	"	"	"
Selenium	0.463	0.285	"	"	"	"	"	"
Silver	ND	0.0219	"	"	"	"	"	"
Zinc	17.3	0.439	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	88.3	0.0549	mg/L dry	1	BFH0400	08/18/22	08/22/22	EPA 6020B	
Magnesium	28.9	0.0549	"	"	"	"	"	"	
Sodium	166	0.0549	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.92	0.00100	units	1	BFH0452	08/22/22	08/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@5'
2208179-07 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.1		%	1	BFH0319	08/16/22	08/16/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.78	0.0100	mmhos/cm	1	BFH0428	08/19/22	08/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **08/12/22 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.90		pH Units	1	BFH0429	08/19/22	08/19/22	EPA 9045D	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@7'
2208179-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFH0332	08/16/22	08/17/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		92.6 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		92.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFH0334	08/16/22	08/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		88.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@7'
2208179-08 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFH0308	08/16/22	08/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		82.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		77.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0766	0.0100	mg/L	1	BFH0310	08/16/22	08/16/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@7'
2208179-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.458	0.215	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B
Barium	37.6	0.429	"	"	"	"	"	"
Cadmium	ND	0.215	"	"	"	"	"	"
Copper	2.89	0.429	"	"	"	"	"	"
Lead	3.26	0.215	"	"	"	"	"	"
Nickel	3.07	0.429	"	"	"	"	"	"
Selenium	0.413	0.279	"	"	"	"	"	"
Silver	ND	0.0215	"	"	"	"	"	"
Zinc	13.4	0.429	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	30.7	0.0536	mg/L dry	1	BFH0400	08/18/22	08/22/22	EPA 6020B	
Magnesium	13.1	0.0536	"	"	"	"	"	"	
Sodium	103	0.0536	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.92	0.00100	units	1	BFH0452	08/22/22	08/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH01@7'
2208179-08 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	93.2			%	1	BFH0319	08/16/22	08/16/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1.01	0.0100		mmhos/cm	1	BFH0428	08/19/22	08/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **08/12/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.43			pH Units	1	BFH0429	08/19/22	08/19/22	EPA 9045D	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH02@7'
2208179-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFH0332	08/16/22	08/17/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		91.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		92.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.0 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFH0334	08/16/22	08/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		82.6 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH02@7'
2208179-09 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFH0308	08/16/22	08/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		79.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		74.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0868	0.0100	mg/L	1	BFH0310	08/16/22	08/16/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH02@7'
2208179-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.944	0.233	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B
Barium	49.2	0.467	"	"	"	"	"	"
Cadmium	ND	0.233	"	"	"	"	"	"
Copper	4.25	0.467	"	"	"	"	"	"
Lead	4.27	0.233	"	"	"	"	"	"
Nickel	4.28	0.467	"	"	"	"	"	"
Selenium	0.560	0.303	"	"	"	"	"	"
Silver	ND	0.0233	"	"	"	"	"	"
Zinc	19.3	0.467	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	67.3	0.0583	mg/L dry	1	BFH0400	08/18/22	08/22/22	EPA 6020B	
Magnesium	24.5	0.0583	"	"	"	"	"	"	
Sodium	158	0.0583	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.19	0.00100	units	1	BFH0452	08/22/22	08/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH02@7'
2208179-09 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.7		%	1	BFH0319	08/16/22	08/16/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.57	0.0100	mmhos/cm	1	BFH0428	08/19/22	08/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **08/12/22 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.75		pH Units	1	BFH0429	08/19/22	08/19/22	EPA 9045D	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH03@8'
2208179-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFH0332	08/16/22	08/17/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		90.8 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		91.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFH0334	08/16/22	08/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		70.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH03@8'
2208179-10 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFH0308	08/16/22	08/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		84.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		78.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0860	0.0100	mg/L	1	BFH0310	08/16/22	08/16/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH03@8'
2208179-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	2.55	0.243	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B
Barium	92.7	0.487	"	"	"	"	"	"
Cadmium	ND	0.243	"	"	"	"	"	"
Copper	6.19	0.487	"	"	"	"	"	"
Lead	4.82	0.243	"	"	"	"	"	"
Nickel	5.43	0.487	"	"	"	"	"	"
Selenium	0.576	0.316	"	"	"	"	"	"
Silver	ND	0.0243	"	"	"	"	"	"
Zinc	23.9	0.487	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	64.5	0.0608	mg/L dry	1	BFH0400	08/18/22	08/22/22	EPA 6020B	
Magnesium	24.6	0.0608	"	"	"	"	"	"	
Sodium	163	0.0608	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.38	0.00100	units	1	BFH0452	08/22/22	08/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH03@8'
2208179-10 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.2		%	1	BFH0319	08/16/22	08/16/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.47	0.0100	mmhos/cm	1	BFH0428	08/19/22	08/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **08/12/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.84		pH Units	1	BFH0429	08/19/22	08/19/22	EPA 9045D	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH04@10'
2208179-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFH0332	08/16/22	08/17/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		92.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.1 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFH0334	08/16/22	08/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH04@10'
2208179-11 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFH0308	08/16/22	08/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		83.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		74.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0772	0.0100	mg/L	1	BFH0310	08/16/22	08/16/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH04@10'
2208179-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.853	0.232	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B
Barium	72.4	0.464	"	"	"	"	"	"
Cadmium	ND	0.232	"	"	"	"	"	"
Copper	4.53	0.464	"	"	"	"	"	"
Lead	4.34	0.232	"	"	"	"	"	"
Nickel	4.69	0.464	"	"	"	"	"	"
Selenium	0.490	0.302	"	"	"	"	"	"
Silver	ND	0.0232	"	"	"	"	"	"
Zinc	19.2	0.464	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	68.2	0.0581	mg/L dry	1	BFH0400	08/18/22	08/22/22	EPA 6020B	
Magnesium	22.3	0.0581	"	"	"	"	"	"	
Sodium	150	0.0581	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.03	0.00100	units	1	BFH0452	08/22/22	08/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH04@10'
2208179-11 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	86.1			%	1	BFH0319	08/16/22	08/16/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1.48	0.0100		mmhos/cm	1	BFH0428	08/19/22	08/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **08/12/22 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.82			pH Units	1	BFH0429	08/19/22	08/19/22	EPA 9045D	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH05@8'
2208179-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFH0332	08/16/22	08/17/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		94.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		90.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.0 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFH0334	08/16/22	08/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		74.6 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH05@8'
2208179-12 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFH0308	08/16/22	08/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		73.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		74.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0688	0.0100	mg/L	1	BFH0310	08/16/22	08/16/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH05@8'
2208179-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.981	0.232	mg/kg dry	1	BFH0376	08/17/22	08/21/22	EPA 6020B
Barium	34.6	0.464	"	"	"	"	"	"
Cadmium	ND	0.232	"	"	"	"	"	"
Copper	3.43	0.464	"	"	"	"	"	"
Lead	3.03	0.232	"	"	"	"	"	"
Nickel	3.58	0.464	"	"	"	"	"	"
Selenium	0.542	0.301	"	"	"	"	"	"
Silver	ND	0.0232	"	"	"	"	"	"
Zinc	16.0	0.464	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFH0351	08/17/22	08/18/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	61.2	0.0580	mg/L dry	1	BFH0400	08/18/22	08/22/22	EPA 6020B	
Magnesium	22.2	0.0580	"	"	"	"	"	"	
Sodium	144	0.0580	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.01	0.00100	units	1	BFH0452	08/22/22	08/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

BH05@8'
2208179-12 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.3		%	1	BFH0319	08/16/22	08/16/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.43	0.0100	mmhos/cm	1	BFH0428	08/19/22	08/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **08/12/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.83		pH Units	1	BFH0429	08/19/22	08/19/22	EPA 9045D	

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

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 BFH0332 - EPA 5030 Soil MS

Blank (BFH0332-BLK1)

Prepared & Analyzed: 08/16/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0310		"	0.0400		77.6	50-150			
Surrogate: Toluene-d8	0.0384		"	0.0400		96.1	50-150			
Surrogate: 4-Bromofluorobenzene	0.0350		"	0.0400		87.6	50-150			

LCS (BFH0332-BS1)

Prepared & Analyzed: 08/16/22

Benzene	0.0735	0.0020	mg/kg	0.0750		98.0	70-130			
Toluene	0.0770	0.0050	"	0.0750		103	70-130			
Ethylbenzene	0.0832	0.0050	"	0.0750		111	70-130			
m,p-Xylene	0.166	0.010	"	0.150		111	70-130			
o-Xylene	0.0789	0.0050	"	0.0750		105	70-130			
1,2,4-Trimethylbenzene	0.0800	0.0050	"	0.0750		107	70-130			
1,3,5-Trimethylbenzene	0.0824	0.0050	"	0.0750		110	70-130			
Naphthalene	0.0876	0.0038	"	0.0750		117	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0326		"	0.0400		81.4	50-150			
Surrogate: Toluene-d8	0.0385		"	0.0400		96.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0350		"	0.0400		87.5	50-150			

Matrix Spike (BFH0332-MS1)

Source: 2208178-01

Prepared & Analyzed: 08/16/22

Benzene	0.0720	0.0020	mg/kg	0.0750	ND	96.0	70-130			
Toluene	0.0755	0.0050	"	0.0750	ND	101	70-130			
Ethylbenzene	0.0790	0.0050	"	0.0750	ND	105	70-130			
m,p-Xylene	0.160	0.010	"	0.150	ND	106	70-130			
o-Xylene	0.0761	0.0050	"	0.0750	ND	101	70-130			
1,2,4-Trimethylbenzene	0.0784	0.0050	"	0.0750	ND	105	70-130			
1,3,5-Trimethylbenzene	0.0799	0.0050	"	0.0750	ND	107	70-130			
Naphthalene	0.0967	0.0038	"	0.0750	ND	129	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0365		"	0.0400		91.2	50-150			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.5	50-150			
Surrogate: 4-Bromofluorobenzene	0.0358		"	0.0400		89.6	50-150			

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

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 BFH0332 - EPA 5030 Soil MS

Matrix Spike Dup (BFH0332-MSD1)	Source: 2208178-01			Prepared & Analyzed: 08/16/22						
Benzene	0.0728	0.0020	mg/kg	0.0750	ND	97.0	70-130	1.04	30	
Toluene	0.0752	0.0050	"	0.0750	ND	100	70-130	0.478	30	
Ethylbenzene	0.0797	0.0050	"	0.0750	ND	106	70-130	0.983	30	
m,p-Xylene	0.163	0.010	"	0.150	ND	108	70-130	1.79	30	
o-Xylene	0.0769	0.0050	"	0.0750	ND	103	70-130	1.02	30	
1,2,4-Trimethylbenzene	0.0798	0.0050	"	0.0750	ND	106	70-130	1.78	30	
1,3,5-Trimethylbenzene	0.0799	0.0050	"	0.0750	ND	107	70-130	0.0375	30	
Naphthalene	0.0963	0.0038	"	0.0750	ND	128	70-130	0.404	30	
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0400		91.4	50-150			
Surrogate: Toluene-d8	0.0384		"	0.0400		96.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0358		"	0.0400		89.5	50-150			

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFH0334 - EPA 3550A

Blank (BFH0334-BLK1)

Prepared: 08/16/22 Analyzed: 08/17/22

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								

LCS (BFH0334-BS1)

Prepared: 08/16/22 Analyzed: 08/17/22

C10-C28 (DRO)	488	50	mg/kg	500		97.7	70-130				
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Matrix Spike (BFH0334-MS1)

Source: 2208178-01

Prepared: 08/16/22 Analyzed: 08/17/22

C10-C28 (DRO)	451	50	mg/kg	500	24.6	85.2	70-130				
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Matrix Spike Dup (BFH0334-MSD1)

Source: 2208178-01

Prepared: 08/16/22 Analyzed: 08/17/22

C10-C28 (DRO)	447	50	mg/kg	500	24.6	84.5	70-130	0.820	20		
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Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFH0308 - EPA 5030 Soil MS

Blank (BFH0308-BLK1)

Prepared: 08/16/22 Analyzed: 08/17/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0369		"	0.0333		111	40-150			
Surrogate: Fluoranthene-d10	0.0358		"	0.0333		107	40-150			

LCS (BFH0308-BS1)

Prepared: 08/16/22 Analyzed: 08/17/22

Acenaphthene	0.0320	0.00500	mg/kg	0.0333	96.0	31-137
Anthracene	0.0322	0.00500	"	0.0333	96.6	30-120
Benzo (a) anthracene	0.0284	0.00500	"	0.0333	85.2	30-120
Benzo (a) pyrene	0.0272	0.00500	"	0.0333	81.5	30-120
Benzo (b) fluoranthene	0.0274	0.00500	"	0.0333	82.1	30-120
Benzo (k) fluoranthene	0.0317	0.00500	"	0.0333	95.0	30-120
Chrysene	0.0350	0.00500	"	0.0333	105	30-120
Dibenz (a,h) anthracene	0.0205	0.00500	"	0.0333	61.5	30-120
Fluoranthene	0.0333	0.00500	"	0.0333	99.8	30-120
Fluorene	0.0316	0.00500	"	0.0333	94.8	30-120
Indeno (1,2,3-cd) pyrene	0.0300	0.00500	"	0.0333	89.9	30-120
Pyrene	0.0344	0.00500	"	0.0333	103	35-142
1-Methylnaphthalene	0.0235	0.00500	"	0.0333	70.4	35-142
2-Methylnaphthalene	0.0370	0.00500	"	0.0333	111	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0233		"	0.0333	69.9	40-150
Surrogate: Fluoranthene-d10	0.0331		"	0.0333	99.3	40-150

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFH0308 - EPA 5030 Soil MS

Matrix Spike (BFH0308-MS1)

Source: 2208179-07

Prepared: 08/16/22 Analyzed: 08/17/22

Acenaphthene	0.0219	0.00500	mg/kg	0.0333	ND	65.8	31-137		
Anthracene	0.0228	0.00500	"	0.0333	ND	68.5	30-120		
Benzo (a) anthracene	0.0226	0.00500	"	0.0333	ND	67.7	30-120		
Benzo (a) pyrene	0.0177	0.00500	"	0.0333	ND	53.0	30-120		
Benzo (b) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120		
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.5	30-120		
Chrysene	0.0252	0.00500	"	0.0333	ND	75.7	30-120		
Dibenz (a,h) anthracene	0.0146	0.00500	"	0.0333	ND	43.9	30-120		
Fluoranthene	0.0241	0.00500	"	0.0333	ND	72.2	30-120		
Fluorene	0.0217	0.00500	"	0.0333	ND	65.2	30-120		
Indeno (1,2,3-cd) pyrene	0.0227	0.00500	"	0.0333	ND	68.2	30-120		
Pyrene	0.0240	0.00500	"	0.0333	ND	72.0	35-142		
1-Methylnaphthalene	0.0192	0.00500	"	0.0333	ND	57.5	15-130		
2-Methylnaphthalene	0.0269	0.00500	"	0.0333	ND	80.8	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0162		"	0.0333		48.6	40-150		
Surrogate: Fluoranthene-d10	0.0240		"	0.0333		72.1	40-150		

Matrix Spike Dup (BFH0308-MSD1)

Source: 2208179-07

Prepared: 08/16/22 Analyzed: 08/17/22

Acenaphthene	0.0224	0.00500	mg/kg	0.0333	ND	67.1	31-137	1.94	30
Anthracene	0.0243	0.00500	"	0.0333	ND	72.8	30-120	6.05	30
Benzo (a) anthracene	0.0246	0.00500	"	0.0333	ND	73.8	30-120	8.60	30
Benzo (a) pyrene	0.0187	0.00500	"	0.0333	ND	56.2	30-120	5.86	30
Benzo (b) fluoranthene	0.0183	0.00500	"	0.0333	ND	54.8	30-120	6.00	30
Benzo (k) fluoranthene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	4.60	30
Chrysene	0.0243	0.00500	"	0.0333	ND	73.0	30-120	3.69	30
Dibenz (a,h) anthracene	0.0154	0.00500	"	0.0333	ND	46.3	30-120	5.18	30
Fluoranthene	0.0247	0.00500	"	0.0333	ND	74.0	30-120	2.47	30
Fluorene	0.0223	0.00500	"	0.0333	ND	66.8	30-120	2.46	30
Indeno (1,2,3-cd) pyrene	0.0219	0.00500	"	0.0333	ND	65.7	30-120	3.70	30
Pyrene	0.0240	0.00500	"	0.0333	ND	72.0	35-142	0.0723	30
1-Methylnaphthalene	0.0168	0.00500	"	0.0333	ND	50.3	15-130	13.4	50
2-Methylnaphthalene	0.0273	0.00500	"	0.0333	ND	81.8	15-130	1.15	50
Surrogate: 2-Methylnaphthalene-d10	0.0174		"	0.0333		52.2	40-150		
Surrogate: Fluoranthene-d10	0.0250		"	0.0333		74.9	40-150		

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BFH0310 - EPA 3050B

Blank (BFH0310-BLK1)

Prepared & Analyzed: 08/16/22

Boron ND 0.0100 mg/L

LCS (BFH0310-BS1)

Prepared & Analyzed: 08/16/22

Boron 5.00 0.0100 mg/L 5.00 99.9 80-120

Duplicate (BFH0310-DUP1)

Source: 2208178-01

Prepared & Analyzed: 08/16/22

Boron 0.150 0.0100 mg/L 0.160 6.37 20

Matrix Spike (BFH0310-MS1)

Source: 2208178-01

Prepared & Analyzed: 08/16/22

Boron 5.00 0.0100 mg/L 5.00 0.160 96.9 75-125

Matrix Spike Dup (BFH0310-MSD1)

Source: 2208178-01

Prepared & Analyzed: 08/16/22

Boron 5.01 0.0100 mg/L 5.00 0.160 97.0 75-125 0.104 25

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFH0376 - EPA 3050B

Blank (BFH0376-BLK1)

Prepared: 08/17/22 Analyzed: 08/22/22

Arsenic	ND	0.200	mg/kg wet
Barium	ND	0.400	"
Cadmium	ND	0.200	"
Copper	ND	0.400	"
Lead	ND	0.200	"
Nickel	ND	0.400	"
Selenium	ND	0.260	"
Silver	ND	0.0200	"
Zinc	ND	0.400	"

LCS (BFH0376-BS1)

Prepared: 08/17/22 Analyzed: 08/22/22

Arsenic	47.1	0.200	mg/kg wet	40.0	118	80-120
Barium	45.7	0.400	"	40.0	114	80-120
Cadmium	2.10	0.200	"	2.00	105	80-120
Copper	45.3	0.400	"	40.0	113	80-120
Lead	19.0	0.200	"	20.0	94.9	80-120
Nickel	45.3	0.400	"	40.0	113	80-120
Selenium	4.04	0.260	"	4.00	101	80-120
Silver	2.06	0.0200	"	2.00	103	80-120
Zinc	47.8	0.400	"	40.0	119	80-120

Duplicate (BFH0376-DUP1)

Source: 2208179-01

Prepared: 08/17/22 Analyzed: 08/21/22

Arsenic	0.691	0.220	mg/kg dry	0.653	5.75	20
Barium	35.4	0.441	"	36.5	3.12	20
Cadmium	0.0694	0.220	"	0.0662	4.80	20
Copper	3.41	0.441	"	3.53	3.25	20
Lead	3.78	0.220	"	3.46	8.96	20
Nickel	3.21	0.441	"	3.28	2.28	20
Selenium	0.412	0.286	"	0.505	20.4	20
Silver	0.0127	0.0220	"	0.0151	17.7	20
Zinc	14.2	0.441	"	14.6	2.57	20

QR-03

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFH0376 - EPA 3050B

Matrix Spike (BFH0376-MS1)

Source: 2208179-01

Prepared: 08/17/22 Analyzed: 08/21/22

Arsenic	48.4	0.220	mg/kg dry	44.1	0.653	108	75-125
Barium	79.4	0.441	"	44.1	36.5	97.4	75-125
Cadmium	2.40	0.220	"	2.20	0.0662	106	75-125
Copper	49.3	0.441	"	44.1	3.53	104	75-125
Lead	24.5	0.220	"	22.0	3.46	95.7	75-125
Nickel	49.7	0.441	"	44.1	3.28	105	75-125
Selenium	4.58	0.286	"	4.41	0.505	92.5	75-125
Silver	2.21	0.0220	"	2.20	0.0151	99.8	75-125
Zinc	64.0	0.441	"	44.1	14.6	112	75-125

Matrix Spike Dup (BFH0376-MSD1)

Source: 2208179-01

Prepared: 08/17/22 Analyzed: 08/21/22

Arsenic	50.4	0.220	mg/kg dry	44.1	0.653	113	75-125	4.16	25
Barium	82.8	0.441	"	44.1	36.5	105	75-125	4.21	25
Cadmium	2.48	0.220	"	2.20	0.0662	109	75-125	3.15	25
Copper	51.9	0.441	"	44.1	3.53	110	75-125	5.03	25
Lead	25.3	0.220	"	22.0	3.46	99.0	75-125	2.95	25
Nickel	52.2	0.441	"	44.1	3.28	111	75-125	4.96	25
Selenium	4.63	0.286	"	4.41	0.505	93.6	75-125	1.05	25
Silver	2.30	0.0220	"	2.20	0.0151	104	75-125	3.94	25
Zinc	67.3	0.441	"	44.1	14.6	120	75-125	5.02	25

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFH0351 - 3060A Mod

Blank (BFH0351-BLK1)

Prepared: 08/17/22 Analyzed: 08/18/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFH0351-BS1)

Prepared: 08/17/22 Analyzed: 08/18/22

Chromium, Hexavalent 23.8 0.30 mg/kg wet 25.0 95.2 80-120

Duplicate (BFH0351-DUP1)

Source: 2208179-01

Prepared: 08/17/22 Analyzed: 08/18/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFH0351-MS1)

Source: 2208179-01

Prepared: 08/17/22 Analyzed: 08/18/22

Chromium, Hexavalent 28.8 0.30 mg/kg dry 27.5 ND 104 75-125

Matrix Spike Dup (BFH0351-MSD1)

Source: 2208179-01

Prepared: 08/17/22 Analyzed: 08/18/22

Chromium, Hexavalent 27.2 0.30 mg/kg dry 27.5 ND 98.6 75-125 5.71 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFH0400 - General Preparation

Blank (BFH0400-BLK1)

Prepared: 08/18/22 Analyzed: 08/22/22

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

LCS (BFH0400-BS1)

Prepared: 08/18/22 Analyzed: 08/22/22

Calcium	5.55	0.0500	mg/L wet	5.00	111	70-130
Magnesium	5.51	0.0500	"	5.00	110	70-130
Sodium	5.29	0.0500	"	5.00	106	70-130

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: Churchill 5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BFH0319 - General Preparation

Duplicate (BFH0319-DUP1)		Source: 2208178-01		Prepared & Analyzed: 08/16/22						
% Solids	86.9		%		87.4			0.608	20	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFH0428 - General Preparation

Blank (BFH0428-BLK1)

Prepared & Analyzed: 08/19/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFH0428-BS1)

Prepared & Analyzed: 08/19/22

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 102 95-105

Duplicate (BFH0428-DUP1)

Source: 2208179-07

Prepared & Analyzed: 08/19/22

Specific Conductance (EC) 1.79 0.0100 mmhos/cm 1.78 0.336 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Churchill 5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFH0429 - General Preparation

LCS (BFH0429-BS1)

Prepared & Analyzed: 08/19/22

pH	9.02	pH Units	95-105
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Duplicate (BFH0429-DUP1)

Source: 2208179-07

Prepared & Analyzed: 08/19/22

pH	7.92	pH Units	7.90	0.253	20
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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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/22 16:13

Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 20, 2022

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Churchill 5 Wellhead
Work Order #2209280

Enclosed are the results of analyses for samples received by Summit Scientific on 09/14/22 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2209280-01	Water	09/14/22 12:50	09/14/22 17:30
BH02	2209280-02	Water	09/14/22 12:15	09/14/22 17:30
BH03	2209280-03	Water	09/14/22 12:33	09/14/22 17:30
BH04	2209280-04	Water	09/14/22 12:19	09/14/22 17:30
BH05	2209280-05	Water	09/14/22 12:35	09/14/22 17:30

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.

Summit Scientific

S₂

2209280

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

Page 1 of 1

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: Churchill 5 wellhead
Sampler Name: Chase Jonjak, Aaron Otilar 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)	TMB's(1,2,4)&(1,3,5)	Boron - HWS	pH, EC, SAR	PAH - 915	Metals - 915	TDS, Cl, SO4	
1	BH01	9/14/22	1250	4	3				X				X		X					X	
2	BH02	I	1215	I	I				I				I		I				I		
3	BH03	I	1233	I	I				I				I		I				I		
4	BH04	I	1219	I	I				I				I		I				I		
5	BH05	I	1235	I	I				I				I		I				I		
6																					
7																					
8																					
9																					
10																					

Relinquished by: Chase O 9/14/22 1545	Date/Time: 9/14/22 1545	Received by: [Signature]	Date/Time: 9/14/22 1545	Turn Around Time (Check)	Notes:
Relinquished by: Tasman Lockbox 9/14/22 1730	Date/Time: 9/14/22 1730	Received by: [Signature]	Date/Time: 9/14/22 1730	Same Day _____ 72 hours _____ 24 hours _____ Standard <u>X</u> 48 hours _____	Sample Integrity: 3.9 Temperature Upon Receipt: 3.9 Samples Intact: Yes No
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order# 2209280Client: Pvt Tasman Client Project ID: Churchhills wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☒ Other ☐Temp (°C) 3.9Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: 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? ⁽¹⁾	<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 ²⁺), Hexavalent Chromium (Cr ⁶⁺ , 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? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ 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):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Custodian Printed Name

Date/Time

9.14.22

19:30



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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

BH01
2209280-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/14/22 12:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	2.5	1.0		ug/l	1	BF10393	09/15/22	09/16/22	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: **09/14/22 12:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		85.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.5 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **09/14/22 12:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	221	12.0		mg/L	200	BF10461	09/19/22	09/19/22	EPA 300.0	
Sulfate	489	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **09/14/22 12:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1220	10.0		mg/L	1	BF10404	09/16/22	09/16/22	SM2540C	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

BH02
2209280-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/14/22 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BF10393	09/15/22	09/16/22	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: **09/14/22 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.4 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **09/14/22 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	231	12.0	mg/L	200	BF10461	09/19/22	09/19/22	EPA 300.0	
Sulfate	514	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **09/14/22 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	1200	10.0	mg/L	1	BF10404	09/16/22	09/16/22	SM2540C	

Summit Scientific

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

Project: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

BH03
2209280-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/14/22 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BF10393	09/15/22	09/16/22	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: **09/14/22 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		79.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.9 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **09/14/22 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	270	12.0		mg/L	200	BF10461	09/19/22	09/19/22	EPA 300.0	
Sulfate	611	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **09/14/22 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1200	10.0		mg/L	1	BF10404	09/16/22	09/16/22	SM2540C	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

BH04
2209280-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/14/22 12:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BF10393	09/15/22	09/16/22	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: **09/14/22 12:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		121 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.4 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **09/14/22 12:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	238	12.0		mg/L	200	BF10461	09/19/22	09/19/22	EPA 300.0	
Sulfate	540	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **09/14/22 12:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1160	10.0		mg/L	1	BF10404	09/16/22	09/16/22	SM2540C	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

BH05
2209280-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/14/22 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BF10393	09/15/22	09/16/22	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: **09/14/22 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.3 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **09/14/22 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	220	12.0	mg/L	200	BF10461	09/19/22	09/19/22	EPA 300.0	
Sulfate	512	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **09/14/22 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	1200	10.0	mg/L	1	BF10404	09/16/22	09/16/22	SM2540C	

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

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 BFI0393 - EPA 5030 Water MS

Blank (BFI0393-BLK1)

Prepared & Analyzed: 09/15/22

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	11.5		"	13.3		86.6	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.3	20-170			
Surrogate: 4-Bromofluorobenzene	11.8		"	13.3		88.7	21-167			

LCS (BFI0393-BS1)

Prepared & Analyzed: 09/15/22

Benzene	38.1	1.0	ug/l	41.7		91.4	51-132			
Toluene	39.5	1.0	"	41.7		94.7	51-138			
Ethylbenzene	47.0	1.0	"	41.7		113	58-146			
m,p-Xylene	93.3	2.0	"	83.3		112	57-144			
o-Xylene	44.4	1.0	"	41.7		107	53-146			
Naphthalene	41.5	1.0	"	41.7		99.5	70-130			
1,2,4-Trimethylbenzene	49.6	1.0	"	41.7		119	70-130			
1,3,5-Trimethylbenzene	47.8	1.0	"	41.7		115	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.5	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Matrix Spike (BFI0393-MS1)

Source: 2209257-01

Prepared & Analyzed: 09/15/22

Benzene	39.5	1.0	ug/l	41.7	ND	94.7	34-141			
Toluene	38.6	1.0	"	41.7	ND	92.8	27-151			
Ethylbenzene	46.1	1.0	"	41.7	ND	111	29-160			
m,p-Xylene	92.7	2.0	"	83.3	ND	111	20-166			
o-Xylene	44.6	1.0	"	41.7	ND	107	33-159			
Naphthalene	49.6	1.0	"	41.7	ND	119	70-130			
1,2,4-Trimethylbenzene	47.1	1.0	"	41.7	ND	113	70-130			
1,3,5-Trimethylbenzene	46.4	1.0	"	41.7	ND	111	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		104	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.1	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.9	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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

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 BFI0393 - EPA 5030 Water MS

Matrix Spike Dup (BFI0393-MSD1)		Source: 2209257-01			Prepared & Analyzed: 09/15/22					
Benzene	39.0	1.0	ug/l	41.7	ND	93.6	34-141	1.15	30	
Toluene	39.9	1.0	"	41.7	ND	95.7	27-151	3.11	30	
Ethylbenzene	47.2	1.0	"	41.7	ND	113	29-160	2.53	30	
m,p-Xylene	94.3	2.0	"	83.3	ND	113	20-166	1.71	30	
o-Xylene	46.5	1.0	"	41.7	ND	112	33-159	4.13	30	
Naphthalene	43.2	1.0	"	41.7	ND	104	70-130	13.6	30	
1,2,4-Trimethylbenzene	49.4	1.0	"	41.7	ND	119	70-130	4.74	30	
1,3,5-Trimethylbenzene	48.7	1.0	"	41.7	ND	117	70-130	4.86	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.8	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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BFI0461 - General Preparation

Blank (BFI0461-BLK1)

Prepared & Analyzed: 09/19/22

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (BFI0461-BS1)

Prepared & Analyzed: 09/19/22

Chloride	3.28	0.0600	mg/L	3.00	110	90-110
Sulfate	15.8	0.300	"	15.0	105	90-110

Duplicate (BFI0461-DUP1)

Source: 2209257-01

Prepared & Analyzed: 09/19/22

Chloride	116	12.0	mg/L	116	0.00	20
Sulfate	231	60.0	"	220	4.78	20

Matrix Spike (BFI0461-MS1)

Source: 2209257-01

Prepared & Analyzed: 09/19/22

Chloride	694	12.0	mg/L	600	116	96.3	80-120
Sulfate	3450	60.0	"	3000	220	108	80-120

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: Churchill 5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BFI0404 - General Preparation

Blank (BFI0404-BLK1)

Prepared & Analyzed: 09/16/22

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BFI0404-DUP1)

Source: 2209225-01

Prepared & Analyzed: 09/16/22

Total Dissolved Solids 1570 10.0 mg/L 1500 4.43 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Churchill 5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/20/22 15:56

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

Attachment B

**TASMAN****Borehole Logging Form**

BOREHOLE ID: BH01 SITE NAME: Churchill 5 Wellhead CLIENT NAME: PDC ENERGY

Date Completed: 8/12/2022 Location: Source

Drilling Company: Tasman Surface Completion: PVC Riser DTW: 6' TD: 11'

Type of Drill: 9580 Power Probe Geologist: M. Connolly Project Manager: B. Nelson

Bit Size: 2 3/8" Logging Method: Hand Auger / 9580 Power Probe

Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SW	0-1' Brown sand fine to medium grain, poorly sorted, trace Fines, dry, no odor
2				0.0		SW	1-5' as above, no trace Fines
3		HA	100%	0.0			
4				0.1			
5				1.4	BH01@5' 1042	SW	5-7' as above, light gray, organic odor
6		DP	50%	0.0		SW	5-6' low to no recovery due to collapse, 6' - as above, saturated
7				0.0	BH01@7' 1059	SW	6-8' - Brown sand, fine to coarse gr, poorly sorted, saturated, no odor, Flowing sands
8				0.0			
9		DP	60%	0.0			
10				0.0		SW	10-11' Brown sand, fine to coarse gr, poorly sorted, saturated, no odor
11				0.0			
12							Well
13							0-1' - PVC blank riser
14							1-11' - PVC slotted screen
15							Fill
16							0-1' - Bentonite chips
17							1-11' - 10-20 washed silica sand
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: BH02		SITE NAME: Churchill 5 Wellhead		CLIENT NAME: PDC ENERGY			
Date Completed: 8/12/2022		Location: N of source					
Drilling Company: Tasman		Surface Completion: PVC Riser DTW: 6' TD: 11'					
Type of Drill: 9580 Power Probe		Geologist: M. Connolly		Project Manager: B. Nelson			
Bit Size: 2 3/8"		Logging Method: Hand Auger / 9580 Power Probe					
Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank							
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SW	0-6' Brown sand, Fine to med. gr., poorly sorted, dry, no odor
2		HA	100%	0.0			
3				0.0			
4				0.0			
5				0.0			5-6' - low recovery due to collapsing sands
6		DP	60%	0.0		SW	6' - As above, saturated
7				0.1	BH02 7' IIII	SW	6-8' - Brown sand, Fine to coarse gr., poorly sorted, saturated, 10 odor, Flaming sands
8				0.0		SC	8-9' - Brown clayey sand, Fine to med gr., poorly sorted, saturated, no odor
9		DP	70%	0.0		SW	9-11' - Brown sand, Fine to med gr., poorly sorted, saturated, no odor
10				0.0			
11				0.0			
12							Well
13							0-1' - PVC blank riser
14							1-11' - PVC slotted screen
15							Fill
16							0-1' - Bentonite chips
17							1-11' - 10-20 washed silica sand
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: BH03 SITE NAME: Churchill 5 wellhead CLIENT NAME: PDC ENERGY

Date Completed: 8/12/2022 Location: W of Source

Drilling Company: Tasman Surface Completion: DTW: 6' TD: 11'

Type of Drill: 9580 Power Probe Geologist: M. Connolly Project Manager: B. Nelson

Bit Size: 2 3/8" Logging Method: Hand Auger / 9580 Power Probe

Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SW	0-6' Brown sand, Fine to med gr, poorly sorted, dry, no odor
2				0.0			
3		HA	100%	0.0			
4				0.0			
5				0.0			
6		DP	20%	0.0		SW	5' - low recovery due to collapsing sands
7				0.0		SW	6' - as above, saturated
8				0.1	BH0308'		6' - Brown sand, Fine to coarse gr, poorly sorted, saturated, no odor, flowing sands
9		DP	50%	0.0	1325	SW	9-11' - As above, iron oxide staining
10				0.0			
11				0.0			
12							Well
13							0-1' - PVC blank riser
14							1-11' - PVC slotted screen
15							Fill
16							0-1' - Bentonite chips
17							1-11' - 10-20 washed silica sand
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: BH04

SITE NAME: Churchill 5 wellhead

CLIENT NAME: PDC ENERGY

Date Completed: 8/12/2022

Location: S of source

Drilling Company: Tasman

Surface Completion: PVC Riser

DTW: 6'

TD: 11'

Type of Drill: 9580 Power Probe

Geologist: M. Connolly

Project Manager: B. Nelson

Bit Size: 2 3/8"

Logging Method: Hand Auger / 9580 Power Probe

Well Const. Material: Diameter: 1"

Screen: Sch 40 PVC Slotted 0.010

Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SW	0-1' Brown sand, Fine to med gr, poorly sorted, trace fines, no odor
2				0.0			1-6' - as above, no trace fines
3		HA	100%	0.0			
4				0.0			
5				0.0			
6		DP	30%	0.1		SW	5-6' - low recovery due to collapsing sands
7				0.0		SW	6' - As above, saturated
8				0.0			6-9' - Brown sand, Fine to coarse gr, poorly sorted, saturated, no odor, Flowing sands
9		DP	60%	0.0		SW	9-11' - As above, iron oxide staining
10				0.2	BH04 @ 10'		
11				0.0	1200		
12							Well
13							0-1' - PVC blank riser
14							1-11' - PVC slotted screen
15							Fill
16							0-1' - Bentonite chips
17							1-11' - washed 10-20 silica sand
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: BH05 SITE NAME: Churchill 5 Wellhead CLIENT NAME: PDC ENERGY

Date Completed: 8/12/2022 Location: E of Source

Drilling Company: Tasman Surface Completion: PVC Riser DTW: 6' TD: 11'

Type of Drill: 9580 Power Probe Geologist: M. Connolly Project Manager: B. Nelson

Bit Size: 2 3/8" Logging Method: Hand Auger / 9580 Power Probe

Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SW	0-6' - Brown sand, fine to med gr, poorly sorted, dry, no odor
2				0.0			
3		HA	100%	0.0			
4				0.0			
5				0.0			5-6' - low recovery due to collapsing sands
6		DP	20%	0.0		SW	6' - as above, saturated
7				0.0		SW	6-11' - Brown sand, fine to coarse gr, poorly sorted, saturated, no odor, flowing sands
8				0.2	BH05 @ 8' 1131		
9		DP	60%	0.0			
10				0.0			
11				0.0			
12							<u>Well</u>
13							0-1' - PVC blank riser
14							1-11' - PVC slotted screen
15							<u>Fill</u>
16							0-1' - Bentonite chips
17							1-11' - 10-20 washed silica sand
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: BK602		SITE NAME: Churchill GWH		CLIENT NAME: PDC ENERGY			
Date Completed: 8/12/22		Location: W of source					
Drilling Company: Tasman		Surface Completion: —		DTW: 6'	TD: 6'		
Type of Drill: Hand Auger / 950 Power Pole		Geologist: M. Connolly		Project Manager: B. Nelson			
Bit Size: 2 3/8"		Logging Method:					
Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank							
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1	NA			0.1		SW	0-6' Brown sand, fine to medium grain, poorly sorted, dry, no odor
2				0.0			
3		HA	100%	0.0	BK602 @ 3' / 1332		
4				0.0			
5				0.0			
6	X	DP	70%	0.0	BK602 @ 6' / 1345		6' - Saturated
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: <u>BK603</u>		SITE NAME: <u>Churchill S WH</u>		CLIENT NAME: <u>PDC ENERGY</u>			
Date Completed: <u>8/12/27</u>		Location: <u>NE of Sare</u>					
Drilling Company: <u>Tasman</u>		Surface Completion: <u> </u>		DTW: <u>6</u> '		TD: <u>6</u> '	
Type of Drill: <u>Hand Auger / 19580 Power Poles</u>		Geologist: <u>M. Connolly</u>		Project Manager: <u>B. Nelson</u>			
Bit Size: <u>2 3/8"</u>		Logging Method: <u> </u>					
Well Const. Material: Diameter: <u>1"</u> Screen: <u>Sch 40 PVC Slotted 0.010</u> Riser: <u>Sch 40 PVC Blank</u>							
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1	NA			0.0		SW	0-6' Brown, sand, fine to medium grain, poorly sorted, dry, no odor
2				0.1			
3		HA	100%	0.0	BK603@3' 1357		
4				0.0			
5				0.0			
6		DP	60%	0.1	BK603@6' 1412		6 - Saturated
7	X						
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

**TASMAN****Borehole Logging Form**

BOREHOLE ID: <u>BK604</u>		SITE NAME: <u>Churchill SWH</u>		CLIENT NAME: <u>PDC ENERGY</u>			
Date Completed: <u>8/12/22</u>		Location: <u>SE of source</u>					
Drilling Company: <u>Tasman</u>		Surface Completion: <u>—</u>		DTW: <u>6'</u>	TD: <u>6'</u>		
Type of Drill: <u>Hand Auger / 9580 Power Probe</u>		Geologist: <u>M. Connolly</u>		Project Manager: <u>B. Nelson</u>			
Bit Size: <u>2 3/8"</u>		Logging Method:					
Well Const. Material: Diameter: <u>1"</u> Screen: <u>Sch 40 PVC Slotted 0.010</u> Riser: <u>Sch 40 PVC Blank</u>							
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1	NA			0.0		Sw	0-6' Brown sand, fine to medium grain, poorly sorted, dry, no odor
2				0.0			
3		HA	100%	0.0	BK604e3' 1350		
4				0.0			
5				0.0			
6	✓	DP	40%	0.0	BK604e6' 1429		6' - saturated
7	X						
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
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25							