

**TABLE 1
FORMER WILLMAN 42-16 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
CONTAMINANTS OF CONCERN**

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)	Anthracene (mg/kg)	Fluorene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ^(1,2)			1.2	490	5.8	58	30	27	2	500	1,800	240	18	24
Protection of Groundwater SSL ^(1,2,3)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	5.8	0.54	0.006	0.019
WH01 @ 6'	9/30/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	0.0070	<0.0050	0.0095	3.4	0.0365	0.0121	0.0400	0.0533
FLR01 @ 4'	9/30/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS01 @ 8'	10/7/2021	8 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS02 @ 4'	10/7/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS03 @ 6'	10/7/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS04 @ 4'	10/7/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS05 @ 6'	10/7/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS06 @ 4'	10/7/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS07 @ 6'	10/7/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS08 @ 4'	10/7/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500
SS09 @ 6'	10/7/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500

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 extractable petroleum hydrocarbons - oil range organics
 mg/kg = Milligrams per kilogram
 M = Methylnaphthalene
 TMB = Trimethylbenzene
 = Source material characterization sample

ft. = Feet

bgs = Below ground surface

BOLD = Analytical result is in exceedance of applicable standard and above 1.25x background concentration.

TABLE 2
FORMER WILLMAN 42-16 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
WH01 @ 6'	9/30/2021	6 ft. bgs	8.20	0.841	4.69	0.150
FLR01 @ 4'	9/30/2021	4 ft. bgs	8.18	0.781	2.44	0.121

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

= Source material characterization sample

TABLE 3
FORMER WILLMAN 42-16 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
WH01 @ 6'	9/30/2021	6 ft. bgs	<0.00500	0.0365	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0121	<0.00500	<0.00500	0.0400	0.0533
FLR01 @ 4'	9/30/2021	4 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

Benzo(a) = Benzoanthracene

Benzo(a) = Benzopyrene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylnaphthalene

mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

BOLD = Analytical result is in exceedance of applicable standard.

 = Source material characterization sample

TABLE 4
FORMER WILLMAN 42-16 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
METALS

Sample ID	Date Sampled	Depth	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (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
WH01 @ 6'	9/30/2021	6 ft. bgs	0.967	9.89	<0.241	<0.30 ⁽⁴⁾	1.81	2.19	1.61	0.335	<0.0241	9.84
BKG02 @ 8'	10/7/2021	8 ft. bgs	10.4	38.2	<0.254	<0.30 ⁽⁴⁾	15.1	10.9	3.51	1.68	0.0424	30.1

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 groundwater is present.
4. Compound falls within COGCC Table 915-1 Footnote 9.

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

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.

TABLE 5
FORMER WILLMAN 42-16 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	-	-
GW01	9/30/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6	NA

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 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

**TABLE 6
FORMER WILLMAN 42-16 WELLHEAD
FIELD DATA SUMMARY TABLE**

Sample ID	Date Sampled	Depth	GPS Data ⁽¹⁾		PDOP Value	VOC Concentration ⁽²⁾ (ppm)
			Latitude	Longitude		
WH01 @ 6'	9/30/2021	6 ft. bgs	40.314438	-104.660538	1.0	6.0
FLR01 @ 4'	9/30/2021	4 ft. bgs	40.314455	-104.660513	1.0	0.0
WHS01-N @ 0-6"	9/30/2021	0-6 in. bgs	40.314488	-104.660518	1.1	0.2
WHS01-W @ 0-6"	9/30/2021	0-6 in. bgs	40.314439	-104.660624	1.0	0.0
WHS01-S @ 0-6"	9/30/2021	0-6 in. bgs	40.314392	-104.660547	0.9	0.3
WHS01-E @ 0-6"	9/30/2021	0-6 in. bgs	40.314447	-104.660453	0.9	0.0
BKG01 @ 4'	9/30/2021	4 ft. bgs	40.314445	-104.660728	1.0	0.1
BKG01 @ 6'	9/30/2021	6 ft. bgs	40.314445	-104.660728	1.0	0.0
SS01 @ 8'	10/7/2021	8 ft. bgs	40.314435	-104.660539	1.1	0.0
SS02 @ 4'	10/7/2021	4 ft. bgs	40.314446	-104.660533	1.4	0.0
SS03 @ 6'	10/7/2021	6 ft. bgs	40.314446	-104.660533	1.4	0.0
SS04 @ 4'	10/7/2021	4 ft. bgs	40.314434	-104.660515	1.3	0.0
SS05 @ 6'	10/7/2021	6 ft. bgs	40.314434	-104.660515	1.3	0.0
SS06 @ 4'	10/7/2021	4 ft. bgs	40.314428	-104.660538	1.0	0.0
SS07 @ 6'	10/7/2021	6 ft. bgs	40.314428	-104.660538	1.0	0.0
SS08 @ 4'	10/7/2021	4 ft. bgs	40.314436	-104.660558	1.2	0.0
SS09 @ 6'	10/7/2021	6 ft. bgs	40.314436	-104.660558	1.2	0.0
BKG02 @ 8'	10/7/2021	8 ft. bgs	40.314447	-104.660724	0.9	0.1

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

in. = Inches

bgs = Below ground surface

 = Source material characterization sample

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 12, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Willman 42-16 Wellhead-1

Work Order #2109464

Enclosed are the results of analyses for samples received by Summit Scientific on 09/30/21 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury
President



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

Project: Willman 42-16 Wellhead-1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2109464-01	Soil	09/30/21 09:50	09/30/21 17:30
GW01	2109464-02	Water	09/30/21 11:18	09/30/21 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

2109464

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

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: Willman 42-16 Wellhead
 Sampler Name: J. Marcus Project Number: N/A

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)	1,2,4 & 1,3,5-TMIB	Boron - HWS	pH, EC, SAR	PAH-915			
1	WH01@6'	9/30/21	0950	3			X			X				X	X	X	X	X	X	pH, EC, SAR by saturated paste	
2	LW01	↓	1118	3			X		X					X	X	X	X	X			
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: <u>[Signature]</u> Date/Time: <u>9/30/21 1400</u>	Received by: <u>Tasman's Lock Box</u> Date/Time: <u>9/30/21 1400</u>	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: Temperature Upon Receipt: <u>5.9</u> Samples Intact: <input checked="" type="checkbox"/> Yes No	Notes:
Relinquished by: <u>Tasman's Lock Box</u> Date/Time: <u>1730/93021</u>	Received by: <u>[Signature]</u> Date/Time: <u>17:30/9.30.21</u>		
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

S₂

Sample Receipt Checklist

S2 Work Order# 1/1

2109464

Client: PDC/Tasman Client Project ID: Willman 42-16 wellhead

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

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

Temp (°C)	<u>5.4</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°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"/>	<u>on ICE</u>
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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Same day</u>
Is a chain-of-custody (COC) form present and filled out completely ⁽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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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.

[Signature]
Custodian Printed Name or Initials

9:30:21
Date/Time



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

Project: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

WH01@6'
2109464-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEI0660	09/30/21	09/30/21	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	0.0070	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	0.0095	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	3.4	0.50		"	"	"	"	"	"	

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEI0661	09/30/21	09/30/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		127 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

WH01@6'
2109464-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEJ0001	10/01/21	10/03/21	EPA 8270D SIM	
Anthracene	0.0365	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	0.0121	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	0.0400	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	0.0533	0.00500	"	"	"	"	"	"	

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		61.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		72.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.150	0.0100	mg/L	1	BEJ0007	10/01/21	10/05/21	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

WH01@6'
2109464-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	0.967	0.241	mg/kg dry	1	BEJ0132	10/07/21	10/10/21	EPA 6020B	
Barium	9.89	0.482	"	"	"	"	"	"	
Cadmium	ND	0.241	"	"	"	"	"	"	
Copper	1.81	0.482	"	"	"	"	"	"	
Lead	2.19	0.241	"	"	"	"	"	"	
Nickel	1.61	0.482	"	"	"	"	"	"	
Selenium	0.335	0.313	"	"	"	"	"	"	
Silver	ND	0.0241	"	"	"	"	"	"	
Zinc	9.84	0.482	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEJ0181	10/11/21	10/11/21	EPA 7196A	

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

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.8	0.0602	mg/L dry	1	BEJ0011	10/01/21	10/05/21	EPA 6020B	
Magnesium	16.3	0.0602	"	"	"	"	"	"	
Sodium	136	0.0602	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.69	0.00100	units	1	BEJ0074	10/05/21	10/05/21	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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

WH01@6'
2109464-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.1		%	1	BEJ0008	10/01/21	10/01/21	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.841	0.0100	mmhos/cm	1	BEJ0040	10/04/21	10/04/21	EPA 120.1	

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

Date Sampled: **09/30/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.20		pH Units	1	BEJ0041	10/04/21	10/04/21	EPA 9045D	

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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

GW01
2109464-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/30/21 11:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BEI0659	09/30/21	09/30/21	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: **09/30/21 11:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		126 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		82.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEI0659 - EPA 5030 Water MS

Blank (BEI0659-BLK1)

Prepared: 09/30/21 Analyzed: 10/01/21

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.0		"	13.3		97.7	23-173				
<i>Surrogate: Toluene-d8</i>	13.0		"	13.3		97.9	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	12.9		"	13.3		96.6	21-167				

LCS (BEI0659-BS1)

Prepared: 09/30/21 Analyzed: 10/01/21

Benzene	24.3	1.0	ug/l	33.3		72.8	51-132				
Toluene	31.1	1.0	"	33.3		93.4	51-138				
Ethylbenzene	35.0	1.0	"	33.3		105	58-146				
m,p-Xylene	71.2	2.0	"	66.7		107	57-144				
o-Xylene	37.3	1.0	"	33.3		112	53-146				
Naphthalene	35.9	1.0	"	33.3		108	70-130				
1,2,4-Trimethylbenzene	39.4	1.0	"	33.3		118	70-130				
1,3,5-Trimethylbenzene	38.0	1.0	"	33.3		114	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	12.7		"	13.3		95.1	23-173				
<i>Surrogate: Toluene-d8</i>	12.9		"	13.3		96.9	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	13.0		"	13.3		97.6	21-167				

Matrix Spike (BEI0659-MS1)

Source: 2109416-01

Prepared: 09/30/21 Analyzed: 10/01/21

Benzene	25.0	1.0	ug/l	33.3	ND	75.2	34-141				
Toluene	32.0	1.0	"	33.3	ND	95.9	27-151				
Ethylbenzene	35.0	1.0	"	33.3	ND	105	29-160				
m,p-Xylene	71.2	2.0	"	66.7	ND	107	20-166				
o-Xylene	37.8	1.0	"	33.3	ND	113	33-159				
Naphthalene	38.2	1.0	"	33.3	ND	115	70-130				
1,2,4-Trimethylbenzene	39.6	1.0	"	33.3	ND	119	70-130				
1,3,5-Trimethylbenzene	38.0	1.0	"	33.3	ND	114	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.1		"	13.3		98.6	23-173				
<i>Surrogate: Toluene-d8</i>	13.2		"	13.3		98.8	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	12.9		"	13.3		97.0	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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEI0659 - EPA 5030 Water MS

Matrix Spike Dup (BEI0659-MSD1)

Source: 2109416-01

Prepared: 09/30/21 Analyzed: 10/01/21

Benzene	25.0	1.0	ug/l	33.3	ND	74.9	34-141	0.400	30
Toluene	31.9	1.0	"	33.3	ND	95.7	27-151	0.188	30
Ethylbenzene	35.3	1.0	"	33.3	ND	106	29-160	0.796	30
m,p-Xylene	71.8	2.0	"	66.7	ND	108	20-166	0.965	30
o-Xylene	37.8	1.0	"	33.3	ND	114	33-159	0.159	30
Naphthalene	40.5	1.0	"	33.3	ND	122	70-130	5.82	30
1,2,4-Trimethylbenzene	39.8	1.0	"	33.3	ND	120	70-130	0.680	30
1,3,5-Trimethylbenzene	38.3	1.0	"	33.3	ND	115	70-130	0.734	30
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173		
Surrogate: Toluene-d8	13.2		"	13.3		99.2	20-170		
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		100	21-167		

Batch BEI0660 - EPA 5030 Soil MS

Blank (BEI0660-BLK1)

Prepared & Analyzed: 09/30/21

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	0.0423		"	0.0400		106	23-173		
Surrogate: Toluene-d8	0.0510		"	0.0400		127	20-170		
Surrogate: 4-Bromofluorobenzene	0.0431		"	0.0400		108	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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch BEI0660 - EPA 5030 Soil MS

Matrix Spike (BEI0660-MS1)	Source: 2109462-01			Prepared: 09/30/21 Analyzed: 10/01/21					
Benzene	0.140	0.0020	mg/kg	0.150	ND	93.5	70-130		
Toluene	0.142	0.0050	"	0.150	ND	94.5	70-130		
Ethylbenzene	0.125	0.0050	"	0.150	ND	83.3	70-130		
m,p-Xylene	0.293	0.010	"	0.300	ND	97.6	70-130		
o-Xylene	0.124	0.0050	"	0.150	ND	82.4	70-130		
1,2,4-Trimethylbenzene	0.127	0.0050	"	0.150	ND	84.5	70-130		
1,3,5-Trimethylbenzene	0.137	0.0050	"	0.150	ND	91.5	70-130		
Naphthalene	0.126	0.0038	"	0.150	ND	84.1	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0458</i>		<i>"</i>	<i>0.0400</i>		<i>115</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0425</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>		

Matrix Spike Dup (BEI0660-MSD1)	Source: 2109462-01			Prepared: 09/30/21 Analyzed: 10/01/21					
Benzene	0.153	0.0020	mg/kg	0.150	ND	102	70-130	8.89	30
Toluene	0.150	0.0050	"	0.150	ND	99.8	70-130	5.46	30
Ethylbenzene	0.138	0.0050	"	0.150	ND	92.2	70-130	10.1	30
m,p-Xylene	0.259	0.010	"	0.300	ND	86.2	70-130	12.5	30
o-Xylene	0.136	0.0050	"	0.150	ND	90.6	70-130	9.39	30
1,2,4-Trimethylbenzene	0.107	0.0050	"	0.150	ND	71.3	70-130	17.0	30
1,3,5-Trimethylbenzene	0.120	0.0050	"	0.150	ND	80.3	70-130	13.1	30
Naphthalene	0.108	0.0038	"	0.150	ND	72.3	70-130	15.1	30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0445</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>		

Summit Scientific

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



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

Project: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BEI0661 - EPA 3550A

Blank (BEI0661-BLK1)

Prepared & Analyzed: 09/30/21

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

LCS (BEI0661-BS1)

Prepared & Analyzed: 09/30/21

C10-C28 (DRO)	646	50	mg/kg	500	129	70-130				
---------------	-----	----	-------	-----	-----	--------	--	--	--	--

Matrix Spike (BEI0661-MS1)

Source: 2109453-01

Prepared & Analyzed: 09/30/21

C10-C28 (DRO)	400	50	mg/kg	500	16.8	76.7	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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEJ0001 - EPA 5030 Soil MS

Blank (BEJ0001-BLK1)

Prepared: 10/01/21 Analyzed: 10/03/21

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	0.0238		"	0.0333		71.3	40-150			
Surrogate: Fluoranthene-d10	0.0255		"	0.0333		76.6	40-150			

LCS (BEJ0001-BS1)

Prepared: 10/01/21 Analyzed: 10/03/21

Acenaphthene	0.0334	0.00500	mg/kg	0.0333	100	31-137
Anthracene	0.0341	0.00500	"	0.0333	102	30-120
Benzo (a) anthracene	0.0369	0.00500	"	0.0333	111	30-120
Benzo (a) pyrene	0.0363	0.00500	"	0.0333	109	30-120
Benzo (b) fluoranthene	0.0368	0.00500	"	0.0333	110	30-120
Benzo (k) fluoranthene	0.0357	0.00500	"	0.0333	107	30-120
Chrysene	0.0343	0.00500	"	0.0333	103	30-120
Dibenz (a,h) anthracene	0.0332	0.00500	"	0.0333	99.6	30-120
Fluoranthene	0.0346	0.00500	"	0.0333	104	30-120
Fluorene	0.0336	0.00500	"	0.0333	101	30-120
Indeno (1,2,3-cd) pyrene	0.0311	0.00500	"	0.0333	93.4	30-120
Pyrene	0.0353	0.00500	"	0.0333	106	35-142
1-Methylnaphthalene	0.0333	0.00500	"	0.0333	99.8	35-142
2-Methylnaphthalene	0.0345	0.00500	"	0.0333	104	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0240		"	0.0333	72.0	40-150
Surrogate: Fluoranthene-d10	0.0211		"	0.0333	63.2	40-150

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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEJ0001 - EPA 5030 Soil MS

Matrix Spike (BEJ0001-MS1)	Source: 2109343-02			Prepared: 10/01/21 Analyzed: 10/03/21					
Acenaphthene	0.0270	0.00500	mg/kg	0.0333	ND	81.1	31-137		
Anthracene	0.0263	0.00500	"	0.0333	ND	79.0	30-120		
Benzo (a) anthracene	0.0249	0.00500	"	0.0333	ND	74.6	30-120		
Benzo (a) pyrene	0.0244	0.00500	"	0.0333	ND	73.3	30-120		
Benzo (b) fluoranthene	0.0236	0.00500	"	0.0333	ND	70.9	30-120		
Benzo (k) fluoranthene	0.0233	0.00500	"	0.0333	ND	69.8	30-120		
Chrysene	0.0260	0.00500	"	0.0333	ND	78.0	30-120		
Dibenz (a,h) anthracene	0.0218	0.00500	"	0.0333	ND	65.3	30-120		
Fluoranthene	0.0233	0.00500	"	0.0333	ND	70.0	30-120		
Fluorene	0.0275	0.00500	"	0.0333	0.00768	59.6	30-120		
Indeno (1,2,3-cd) pyrene	0.0293	0.00500	"	0.0333	ND	87.9	30-120		
Pyrene	0.0263	0.00500	"	0.0333	ND	79.0	35-142		
1-Methylnaphthalene	0.0280	0.00500	"	0.0333	ND	84.1	15-130		
2-Methylnaphthalene	0.0225	0.00500	"	0.0333	ND	67.5	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0229		"	0.0333		68.7	40-150		
Surrogate: Fluoranthene-d10	0.0246		"	0.0333		73.9	40-150		

Matrix Spike Dup (BEJ0001-MSD1)	Source: 2109343-02			Prepared: 10/01/21 Analyzed: 10/03/21					
Acenaphthene	0.0351	0.00500	mg/kg	0.0333	ND	105	31-137	25.9	30
Anthracene	0.0340	0.00500	"	0.0333	ND	102	30-120	25.2	30
Benzo (a) anthracene	0.0335	0.00500	"	0.0333	ND	100	30-120	29.6	30
Benzo (a) pyrene	0.0323	0.00500	"	0.0333	ND	97.0	30-120	27.9	30
Benzo (b) fluoranthene	0.0308	0.00500	"	0.0333	ND	92.3	30-120	26.3	30
Benzo (k) fluoranthene	0.0300	0.00500	"	0.0333	ND	89.9	30-120	25.3	30
Chrysene	0.0333	0.00500	"	0.0333	ND	100	30-120	24.7	30
Dibenz (a,h) anthracene	0.0294	0.00500	"	0.0333	ND	88.1	30-120	29.8	30
Fluoranthene	0.0306	0.00500	"	0.0333	ND	91.8	30-120	27.0	30
Fluorene	0.0341	0.00500	"	0.0333	0.00768	79.2	30-120	21.2	30
Indeno (1,2,3-cd) pyrene	0.0272	0.00500	"	0.0333	ND	81.6	30-120	7.51	30
Pyrene	0.0336	0.00500	"	0.0333	ND	101	35-142	24.4	30
1-Methylnaphthalene	0.0344	0.00500	"	0.0333	ND	103	15-130	20.5	50
2-Methylnaphthalene	0.0308	0.00500	"	0.0333	ND	92.3	15-130	31.1	50
Surrogate: 2-Methylnaphthalene-d10	0.0243		"	0.0333		72.8	40-150		
Surrogate: Fluoranthene-d10	0.0213		"	0.0333		63.9	40-150		

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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

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

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

Batch BEJ0007 - EPA 3050B

Blank (BEJ0007-BLK1)

Prepared: 10/01/21 Analyzed: 10/05/21

Boron ND 0.0100 mg/L

LCS (BEJ0007-BS1)

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 5.01 0.0100 mg/L 5.00 100 80-120

Duplicate (BEJ0007-DUP1)

Source: 2109464-01

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 0.148 0.0100 mg/L 0.150 1.49 20

Matrix Spike (BEJ0007-MS1)

Source: 2109464-01

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 5.00 0.0100 mg/L 5.00 0.150 97.1 75-125

Matrix Spike Dup (BEJ0007-MSD1)

Source: 2109464-01

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 5.52 0.0100 mg/L 5.00 0.150 107 75-125 9.84 25

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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BEJ0132 - EPA 3050B

Blank (BEJ0132-BLK1)

Prepared: 10/07/21 Analyzed: 10/10/21

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 (BEJ0132-BS1)

Prepared: 10/07/21 Analyzed: 10/10/21

Arsenic	44.9	0.200	mg/kg wet	40.0	112	80-120
Barium	38.9	0.400	"	40.0	97.2	80-120
Cadmium	2.13	0.200	"	2.00	106	80-120
Copper	43.0	0.400	"	40.0	107	80-120
Lead	19.5	0.200	"	20.0	97.7	80-120
Nickel	42.4	0.400	"	40.0	106	80-120
Selenium	4.07	0.260	"	4.00	102	80-120
Silver	2.03	0.0200	"	2.00	101	80-120
Zinc	45.7	0.400	"	40.0	114	80-120

Duplicate (BEJ0132-DUP1)

Source: 2109069-01

Prepared: 10/07/21 Analyzed: 10/10/21

Arsenic	0.473	0.235	mg/kg dry	0.546	14.4	20
Barium	57.9	0.470	"	52.6	9.54	20
Cadmium	0.0476	0.235	"	0.0547	14.0	20
Copper	5.68	0.470	"	6.40	11.8	20
Lead	5.25	0.235	"	6.22	17.0	20
Nickel	4.24	0.470	"	4.84	13.2	20
Selenium	0.630	0.305	"	0.763	19.2	20
Silver	0.0248	0.0235	"	0.0243	2.31	20
Zinc	25.8	0.470	"	30.0	15.1	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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BEJ0132 - EPA 3050B

Matrix Spike (BEJ0132-MS1)	Source: 2109069-01			Prepared: 10/07/21 Analyzed: 10/10/21								
Arsenic	57.2	0.235	mg/kg dry	47.0	0.546	121	75-125					
Barium	104	0.470	"	47.0	52.6	109	75-125					
Cadmium	2.87	0.235	"	2.35	0.0547	120	75-125					
Copper	55.5	0.470	"	47.0	6.40	105	75-125					
Lead	28.1	0.235	"	23.5	6.22	93.1	75-125					
Nickel	55.1	0.470	"	47.0	4.84	107	75-125					
Selenium	5.25	0.305	"	4.70	0.763	95.5	75-125					
Silver	2.59	0.0235	"	2.35	0.0243	109	75-125					
Zinc	81.8	0.470	"	47.0	30.0	110	75-125					

Matrix Spike Dup (BEJ0132-MSD1)	Source: 2109069-01			Prepared: 10/07/21 Analyzed: 10/10/21								
Arsenic	56.2	0.235	mg/kg dry	47.0	0.546	119	75-125	1.66	25			
Barium	104	0.470	"	47.0	52.6	111	75-125	0.721	25			
Cadmium	2.87	0.235	"	2.35	0.0547	120	75-125	0.0191	25			
Copper	59.1	0.470	"	47.0	6.40	112	75-125	6.30	25			
Lead	28.4	0.235	"	23.5	6.22	94.5	75-125	1.13	25			
Nickel	58.9	0.470	"	47.0	4.84	115	75-125	6.74	25			
Selenium	5.31	0.305	"	4.70	0.763	96.8	75-125	1.19	25			
Silver	2.58	0.0235	"	2.35	0.0243	109	75-125	0.295	25			
Zinc	87.7	0.470	"	47.0	30.0	123	75-125	6.96	25			

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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BEJ0181 - 3060A Mod

Blank (BEJ0181-BLK1)

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BEJ0181-BS1)

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent 28.6 0.30 mg/kg wet 25.0 114 80-120

Duplicate (BEJ0181-DUP1)

Source: 2109464-01

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BEJ0181-MS1)

Source: 2109464-01

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent 31.7 0.30 mg/kg dry 30.1 ND 105 75-125

Matrix Spike Dup (BEJ0181-MSD1)

Source: 2109464-01

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent 31.8 0.30 mg/kg dry 30.1 ND 106 75-125 0.379 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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

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

Summit Scientific

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

Batch BEJ0011 - General Preparation

Blank (BEJ0011-BLK1)

Prepared: 10/01/21 Analyzed: 10/05/21

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

LCS (BEJ0011-BS1)

Prepared: 10/01/21 Analyzed: 10/05/21

Calcium	5.40	0.0500	mg/L wet	5.00	108	70-130				
Magnesium	5.27	0.0500	"	5.00	105	70-130				
Sodium	5.13	0.0500	"	5.00	103	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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

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

Summit Scientific

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

Batch BEJ0008 - General Preparation

Duplicate (BEJ0008-DUP1)

Source: 2109446-01

Prepared & Analyzed: 10/01/21

% Solids	96.3		%		96.6			0.322		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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

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

Summit Scientific

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

Batch BEJ0040 - General Preparation

Blank (BEJ0040-BLK1)

Prepared & Analyzed: 10/04/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BEJ0040-BS1)

Prepared & Analyzed: 10/04/21

Specific Conductance (EC) 0.147 0.0100 mmhos/cm 0.150 97.9 90-110

Duplicate (BEJ0040-DUP1)

Source: 2109464-01

Prepared & Analyzed: 10/04/21

Specific Conductance (EC) 0.842 0.0100 mmhos/cm 0.841 0.131 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: Willman 42-16 Wellhead-1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 12:58

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

Summit Scientific

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

Batch BEJ0041 - General Preparation

LCS (BEJ0041-BS1)

Prepared & Analyzed: 10/04/21

pH	9.13	pH Units	9.21	99.1	95-105
----	------	----------	------	------	--------

Duplicate (BEJ0041-DUP1)

Source: 2109464-01

Prepared & Analyzed: 10/04/21

pH	8.20	pH Units	8.20	0.00	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: Willman 42-16 Wellhead-1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 12:58

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 07, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Willman 42-16 Wellhead

Work Order #2109469

Enclosed are the results of analyses for samples received by Summit Scientific on 09/30/21 14:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, sweeping initial "M".

Muri Premer For Paul Shrewsbury
President



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

Project: Willman 42-16 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FLR01@4'	2109469-01	Soil	09/30/21 09:47	09/30/21 14:00

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.

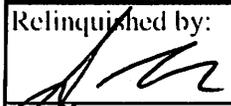
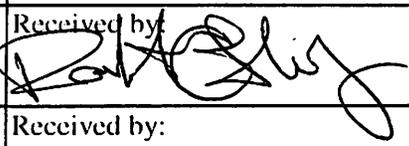
Summit Scientific

2109469

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

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: Willman 42-16 Wellhead
 Sampler Name: J. Marcus Project Number: N/A

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)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	ON HOLD		PAHs
1	FLR01@4'	9/30/21	0947	3			X			X				X	X	X	X	X		
2	BK601@4'	↓	1125	↓			X			X								X		
3	BK601@6'	↓	1126	↓			X			X								X		
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: 	Date/Time: 9/30/21 1400	Received by: Tasman's Lock Box	Date/Time: 9/30/21 1400	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ Sample Integrity: Temperature Upon Receipt: <u>5.4</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 9/30/21 1400	Received by: 	Date/Time: 9/30/21 1400		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

2109469

Sample Receipt Checklist

S2 Work Order# 1/1

Client: PDC/Tasman Client Project ID: willman 42-16 wellhead

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

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

Temp (°C) 5.4

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°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
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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Standard
Is a chain-of-custody (COC) form present and filled out completely ⁽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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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.

[Signature]
Custodian Printed Name or Initials

9.30.21
Date/Time



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

Project: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

FLR01@4'
2109469-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEJ0049	10/04/21	10/05/21	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: **09/30/21 09:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		157 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.3 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEJ0050	10/04/21	10/05/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		117 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

FLR01@4'
2109469-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEJ0001	10/01/21	10/03/21	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: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		65.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		63.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.121	0.0100	mg/L	1	BEJ0007	10/01/21	10/05/21	EPA 6020B	

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

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

FLR01@4'
2109469-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	73.9	0.0595	mg/L dry	1	BEJ0011	10/01/21	10/05/21	EPA 6020B	
Magnesium	14.3	0.0595	"	"	"	"	"	"	
Sodium	87.5	0.0595	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.44	0.00100	units	1	BEJ0074	10/05/21	10/05/21	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.1		%	1	BEJ0035	10/04/21	10/05/21	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.781	0.0100	mmhos/cm	1	BEJ0040	10/04/21	10/04/21	EPA 120.1	

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

Date Sampled: **09/30/21 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.18		pH Units	1	BEJ0041	10/04/21	10/04/21	EPA 9045D	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEJ0049 - EPA 5030 Soil MS

Blank (BEJ0049-BLK1)

Prepared: 10/04/21 Analyzed: 10/05/21

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0621		"	0.0400		155	23-173				
<i>Surrogate: Toluene-d8</i>	0.0428		"	0.0400		107	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0337		"	0.0400		84.3	21-167				

LCS (BEJ0049-BS1)

Prepared: 10/04/21 Analyzed: 10/05/21

Benzene	0.0798	0.0020	mg/kg	0.100		79.8	70-130				
Toluene	0.0847	0.0050	"	0.100		84.7	70-130				
Ethylbenzene	0.124	0.0050	"	0.100		124	70-130				
m,p-Xylene	0.251	0.010	"	0.200		125	70-130				
o-Xylene	0.114	0.0050	"	0.100		114	70-130				
1,2,4-Trimethylbenzene	0.103	0.0050	"	0.100		103	70-130				
1,3,5-Trimethylbenzene	0.130	0.0050	"	0.100		130	70-130				
Naphthalene	0.125	0.0038	"	0.100		125	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0397		"	0.0400		99.2	23-173				
<i>Surrogate: Toluene-d8</i>	0.0278		"	0.0400		69.4	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0331		"	0.0400		82.7	21-167				

Matrix Spike (BEJ0049-MS1)

Source: 2109466-02

Prepared: 10/04/21 Analyzed: 10/05/21

Benzene	0.0784	0.0020	mg/kg	0.100	ND	78.4	70-130				
Toluene	0.0856	0.0050	"	0.100	ND	85.6	70-130				
Ethylbenzene	0.124	0.0050	"	0.100	ND	124	70-130				
m,p-Xylene	0.252	0.010	"	0.200	0.00312	124	70-130				
o-Xylene	0.116	0.0050	"	0.100	ND	116	70-130				
1,2,4-Trimethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130				
1,3,5-Trimethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130				
Naphthalene	0.109	0.0038	"	0.100	ND	109	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0507		"	0.0400		127	23-173				
<i>Surrogate: Toluene-d8</i>	0.0274		"	0.0400		68.6	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0335		"	0.0400		83.7	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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch BEJ0049 - EPA 5030 Soil MS

Matrix Spike Dup (BEJ0049-MSD1)	Source: 2109466-02			Prepared: 10/04/21 Analyzed: 10/05/21						
Benzene	0.0777	0.0020	mg/kg	0.100	ND	77.7	70-130	0.923	30	
Toluene	0.0854	0.0050	"	0.100	ND	85.4	70-130	0.316	30	
Ethylbenzene	0.121	0.0050	"	0.100	ND	121	70-130	2.30	30	
m,p-Xylene	0.246	0.010	"	0.200	0.00312	121	70-130	2.62	30	
o-Xylene	0.112	0.0050	"	0.100	ND	112	70-130	4.02	30	
1,2,4-Trimethylbenzene	0.129	0.0050	"	0.100	ND	129	70-130	20.1	30	
1,3,5-Trimethylbenzene	0.127	0.0050	"	0.100	ND	127	70-130	22.3	30	
Naphthalene	0.126	0.0038	"	0.100	ND	126	70-130	14.5	30	
Surrogate: 1,2-Dichloroethane-d4	0.0633		"	0.0400		158	23-173			
Surrogate: Toluene-d8	0.0434		"	0.0400		108	20-170			
Surrogate: 4-Bromofluorobenzene	0.0327		"	0.0400		81.8	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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BEJ0050 - EPA 3550A

Blank (BEJ0050-BLK1)

Prepared: 10/04/21 Analyzed: 10/05/21

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

LCS (BEJ0050-BS1)

Prepared: 10/04/21 Analyzed: 10/05/21

C10-C28 (DRO)	497	50	mg/kg	500	99.3	70-130				
---------------	-----	----	-------	-----	------	--------	--	--	--	--

Matrix Spike (BEJ0050-MS1)

Source: 2109466-02

Prepared: 10/04/21 Analyzed: 10/05/21

C10-C28 (DRO)	486	50	mg/kg	500	19.2	93.4	70-130			
---------------	-----	----	-------	-----	------	------	--------	--	--	--

Matrix Spike Dup (BEJ0050-MSD1)

Source: 2109466-02

Prepared: 10/04/21 Analyzed: 10/05/21

C10-C28 (DRO)	526	50	mg/kg	500	19.2	101	70-130	7.89	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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEJ0001 - EPA 5030 Soil MS

Blank (BEJ0001-BLK1)

Prepared: 10/01/21 Analyzed: 10/03/21

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	0.0238		"	0.0333		71.3	40-150			
Surrogate: Fluoranthene-d10	0.0255		"	0.0333		76.6	40-150			

LCS (BEJ0001-BS1)

Prepared: 10/01/21 Analyzed: 10/03/21

Acenaphthene	0.0334	0.00500	mg/kg	0.0333	100	31-137
Anthracene	0.0341	0.00500	"	0.0333	102	30-120
Benzo (a) anthracene	0.0369	0.00500	"	0.0333	111	30-120
Benzo (a) pyrene	0.0363	0.00500	"	0.0333	109	30-120
Benzo (b) fluoranthene	0.0368	0.00500	"	0.0333	110	30-120
Benzo (k) fluoranthene	0.0357	0.00500	"	0.0333	107	30-120
Chrysene	0.0343	0.00500	"	0.0333	103	30-120
Dibenz (a,h) anthracene	0.0332	0.00500	"	0.0333	99.6	30-120
Fluoranthene	0.0346	0.00500	"	0.0333	104	30-120
Fluorene	0.0336	0.00500	"	0.0333	101	30-120
Indeno (1,2,3-cd) pyrene	0.0311	0.00500	"	0.0333	93.4	30-120
Pyrene	0.0353	0.00500	"	0.0333	106	35-142
1-Methylnaphthalene	0.0333	0.00500	"	0.0333	99.8	35-142
2-Methylnaphthalene	0.0345	0.00500	"	0.0333	104	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0240		"	0.0333	72.0	40-150
Surrogate: Fluoranthene-d10	0.0211		"	0.0333	63.2	40-150

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEJ0001 - EPA 5030 Soil MS

Matrix Spike (BEJ0001-MS1)	Source: 2109343-02			Prepared: 10/01/21 Analyzed: 10/03/21					
Acenaphthene	0.0270	0.00500	mg/kg	0.0333	ND	81.1	31-137		
Anthracene	0.0263	0.00500	"	0.0333	ND	79.0	30-120		
Benzo (a) anthracene	0.0249	0.00500	"	0.0333	ND	74.6	30-120		
Benzo (a) pyrene	0.0244	0.00500	"	0.0333	ND	73.3	30-120		
Benzo (b) fluoranthene	0.0236	0.00500	"	0.0333	ND	70.9	30-120		
Benzo (k) fluoranthene	0.0233	0.00500	"	0.0333	ND	69.8	30-120		
Chrysene	0.0260	0.00500	"	0.0333	ND	78.0	30-120		
Dibenz (a,h) anthracene	0.0218	0.00500	"	0.0333	ND	65.3	30-120		
Fluoranthene	0.0233	0.00500	"	0.0333	ND	70.0	30-120		
Fluorene	0.0275	0.00500	"	0.0333	0.00768	59.6	30-120		
Indeno (1,2,3-cd) pyrene	0.0293	0.00500	"	0.0333	ND	87.9	30-120		
Pyrene	0.0263	0.00500	"	0.0333	ND	79.0	35-142		
1-Methylnaphthalene	0.0280	0.00500	"	0.0333	ND	84.1	15-130		
2-Methylnaphthalene	0.0225	0.00500	"	0.0333	ND	67.5	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0229		"	0.0333		68.7	40-150		
Surrogate: Fluoranthene-d10	0.0246		"	0.0333		73.9	40-150		

Matrix Spike Dup (BEJ0001-MSD1)	Source: 2109343-02			Prepared: 10/01/21 Analyzed: 10/03/21					
Acenaphthene	0.0351	0.00500	mg/kg	0.0333	ND	105	31-137	25.9	30
Anthracene	0.0340	0.00500	"	0.0333	ND	102	30-120	25.2	30
Benzo (a) anthracene	0.0335	0.00500	"	0.0333	ND	100	30-120	29.6	30
Benzo (a) pyrene	0.0323	0.00500	"	0.0333	ND	97.0	30-120	27.9	30
Benzo (b) fluoranthene	0.0308	0.00500	"	0.0333	ND	92.3	30-120	26.3	30
Benzo (k) fluoranthene	0.0300	0.00500	"	0.0333	ND	89.9	30-120	25.3	30
Chrysene	0.0333	0.00500	"	0.0333	ND	100	30-120	24.7	30
Dibenz (a,h) anthracene	0.0294	0.00500	"	0.0333	ND	88.1	30-120	29.8	30
Fluoranthene	0.0306	0.00500	"	0.0333	ND	91.8	30-120	27.0	30
Fluorene	0.0341	0.00500	"	0.0333	0.00768	79.2	30-120	21.2	30
Indeno (1,2,3-cd) pyrene	0.0272	0.00500	"	0.0333	ND	81.6	30-120	7.51	30
Pyrene	0.0336	0.00500	"	0.0333	ND	101	35-142	24.4	30
1-Methylnaphthalene	0.0344	0.00500	"	0.0333	ND	103	15-130	20.5	50
2-Methylnaphthalene	0.0308	0.00500	"	0.0333	ND	92.3	15-130	31.1	50
Surrogate: 2-Methylnaphthalene-d10	0.0243		"	0.0333		72.8	40-150		
Surrogate: Fluoranthene-d10	0.0213		"	0.0333		63.9	40-150		

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

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

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

Batch BEJ0007 - EPA 3050B

Blank (BEJ0007-BLK1)

Prepared: 10/01/21 Analyzed: 10/05/21

Boron ND 0.0100 mg/L

LCS (BEJ0007-BS1)

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 5.01 0.0100 mg/L 5.00 100 80-120

Duplicate (BEJ0007-DUP1)

Source: 2109464-01

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 0.148 0.0100 mg/L 0.150 1.49 20

Matrix Spike (BEJ0007-MS1)

Source: 2109464-01

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 5.00 0.0100 mg/L 5.00 0.150 97.1 75-125

Matrix Spike Dup (BEJ0007-MSD1)

Source: 2109464-01

Prepared: 10/01/21 Analyzed: 10/05/21

Boron 5.52 0.0100 mg/L 5.00 0.150 107 75-125 9.84 25

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

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

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

Batch BEJ0011 - General Preparation

Blank (BEJ0011-BLK1)

Prepared: 10/01/21 Analyzed: 10/05/21

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

LCS (BEJ0011-BS1)

Prepared: 10/01/21 Analyzed: 10/05/21

Calcium	5.40	0.0500	mg/L wet	5.00	108	70-130
Magnesium	5.27	0.0500	"	5.00	105	70-130
Sodium	5.13	0.0500	"	5.00	103	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: Willman 42-16 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

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

Summit Scientific

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

Batch BEJ0035 - General Preparation

Duplicate (BEJ0035-DUP1)

Source: 2109361-02

Prepared: 10/04/21 Analyzed: 10/05/21

% Solids	91.9		%		91.9			0.0661		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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

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

Summit Scientific

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

Batch BEJ0040 - General Preparation

Blank (BEJ0040-BLK1)

Prepared & Analyzed: 10/04/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BEJ0040-BS1)

Prepared & Analyzed: 10/04/21

Specific Conductance (EC) 0.147 0.0100 mmhos/cm 0.150 97.9 90-110

Duplicate (BEJ0040-DUP1)

Source: 2109464-01

Prepared & Analyzed: 10/04/21

Specific Conductance (EC) 0.842 0.0100 mmhos/cm 0.841 0.131 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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/07/21 14:58

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

Summit Scientific

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

Batch BEJ0041 - General Preparation

LCS (BEJ0041-BS1)

Prepared & Analyzed: 10/04/21

pH 9.13 pH Units 9.21 99.1 95-105

Duplicate (BEJ0041-DUP1)

Source: 2109464-01

Prepared & Analyzed: 10/04/21

pH 8.20 pH Units 8.20 0.00 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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/07/21 14:58

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 12, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

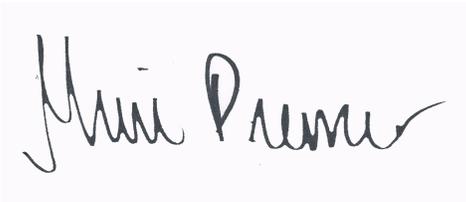
Denver, CO 80203

RE: Willman 42-16 Wellhead

Work Order #2110101

Enclosed are the results of analyses for samples received by Summit Scientific on 10/07/21 16:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized initial "M".

Muri Premer For Paul Shrewsbury
President



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

Project: Willman 42-16 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@8'	2110101-01	Soil	10/07/21 09:02	10/07/21 16:10
SS02@4'	2110101-02	Soil	10/07/21 09:04	10/07/21 16:10
SS03@6'	2110101-03	Soil	10/07/21 09:06	10/07/21 16:10
SS04@4'	2110101-04	Soil	10/07/21 09:08	10/07/21 16:10
SS05@6'	2110101-05	Soil	10/07/21 09:10	10/07/21 16:10
SS06@4'	2110101-06	Soil	10/07/21 09:12	10/07/21 16:10
SS07@6'	2110101-07	Soil	10/07/21 09:14	10/07/21 16:10
SS08@4'	2110101-08	Soil	10/07/21 09:16	10/07/21 16:10
SS09@6'	2110101-09	Soil	10/07/21 09:16	10/07/21 16:10
BKG02@8'	2110101-10	Soil	10/07/21 12:15	10/07/21 16:10

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 2110101

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

Page 1 of 1

Client: PDC Tasman	Project Manager: Mark Longhurst
Address: 6855 W 119th Ave	E-Mail: mark.longhurst@PDCt.com
City/State/Zip: Broomfield, CO 80020	Project Name: <u>Willman 42-16 Wellhead</u>
Phone: 303-487-1228	Project Number:
Sampler Name: <u>David Vigil</u>	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Analysis Requested								Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBTEXN - 8260B	TPH - (C6 - C36)	pH, EC, SAR	Boron - HWS	VOC - 915	PAH - 915		Metals - 915
1	SS01 @ 8'	10/7/21	0902	3			X			X								X	X	pH, EC, SAR by saturated paste
2	SS02 @ 4'	↓	0904	3			X			X							X	X		
3	SS03 @ 6'		0906	3			X			X							X	X		
4	SS04 @ 4'		0908	3			X			X							X	X		
5	SS05 @ 6'		0910	3			X			X							X	X		
6	SS06 @ 4'		0912	3			X			X							X	X		
7	SS07 @ 6'		0914	3			X			X							X	X		
8	SS08 @ 4'		0916	3			X			X							X	X		
9	SS09 @ 6'		0916	3			X			X							X	X		
10	BKG02 @ 8'			1215	1			X								X				

Relinquished by: <u>David Vigil</u>	Date/Time: <u>10/7/21 1610</u>	Received by: <u>Tasman's Lock Box</u>	Date/Time: <u>10-7-21 16:10</u>	Turn Around Time (Check): Same Day <input checked="" type="checkbox"/> 72 hours 24 hours _____ Standard 48 hours _____	ON ICE
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time:	Received by:	Date/Time: <u>10-7-21 16:10</u>	Sample Integrity: _____	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Temperature Upon Receipt: <u>2.0</u> Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2110101

Client: Bob Fasmann Client Project ID: Williamson 42-16 wellhead

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____
 H.D. P.U. FedEx UPS USPS Other

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

Temp (°C) 2.0

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°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
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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sunday
Is a chain-of-custody (COC) form present and filled out completely ⁽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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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 type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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.

[Signature]
Custodian Printed Name or Initials

10-7-21
Date/Time



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

Project: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS01@8'
2110101-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEJ0134	10/07/21	10/07/21	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: **10/07/21 09:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		157 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		125 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.5 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEJ0133	10/07/21	10/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **10/07/21 09:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		120 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS01@8'
2110101-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		86.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		77.0 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS02@4'
2110101-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/07/21	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: **10/07/21 09:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		158 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		125 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS02@4'
2110101-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		86.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		75.4 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS03@6'
2110101-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/07/21	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: **10/07/21 09:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		157 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		128 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		120 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS03@6'
2110101-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		81.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		78.5 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS04@4'
2110101-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/08/21	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: **10/07/21 09:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		91.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		68.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.7 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS04@4'
2110101-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		82.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		76.9 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS05@6'
2110101-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/08/21	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: **10/07/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		161 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		128 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		120 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS05@6'
2110101-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		90.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		80.1 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS06@4'
2110101-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/08/21	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: **10/07/21 09:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		162 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		128 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS06@4'
2110101-06 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 2-Methylnaphthalene-d10		73.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		71.2 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS07@6'
2110101-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/08/21	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: **10/07/21 09:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		158 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		132 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS07@6'
2110101-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		82.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		79.8 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS08@4'
2110101-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/08/21	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: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		159 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		130 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		121 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS08@4'
2110101-08 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		83.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		81.2 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

SS09@6'
2110101-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEJ0134	10/07/21	10/08/21	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: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		129 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		68.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEJ0133	10/07/21	10/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

SS09@6'
2110101-09 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	BEJ0136	10/08/21	10/10/21	EPA 8270D SIM	
Fluorene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/07/21 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		86.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		74.1 %	40-150		"	"	"	"	

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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

BKG02@8'
2110101-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/07/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	10.4	0.254	mg/kg dry	1	BEJ0150	10/08/21	10/11/21	EPA 6020B	
Barium	38.2	0.509	"	"	"	"	"	"	"
Cadmium	ND	0.254	"	"	"	"	"	"	"
Copper	15.1	0.509	"	"	"	"	"	"	"
Lead	10.9	0.254	"	"	"	"	"	"	"
Nickel	3.51	0.509	"	"	"	"	"	"	"
Selenium	1.68	0.331	"	"	"	"	"	"	"
Silver	0.0424	0.0254	"	"	"	"	"	"	"
Zinc	30.1	0.509	"	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/07/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEJ0181	10/11/21	10/11/21	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/07/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	78.6		%	1	BEJ0168	10/11/21	10/11/21	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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

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 BEJ0134 - EPA 5030 Soil MS

Blank (BEJ0134-BLK1)

Prepared: 10/07/21 Analyzed: 10/08/21

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0373		"	0.0400		93.2	23-173			
<i>Surrogate: Toluene-d8</i>	0.0546		"	0.0400		136	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0401		"	0.0400		100	21-167			

LCS (BEJ0134-BS1)

Prepared: 10/07/21 Analyzed: 10/08/21

Benzene	0.0628	0.0020	mg/kg	0.0750		83.8	70-130			
Toluene	0.0849	0.0050	"	0.0750		113	70-130			
Ethylbenzene	0.0677	0.0050	"	0.0750		90.3	70-130			
m,p-Xylene	0.139	0.010	"	0.150		92.9	70-130			
o-Xylene	0.0707	0.0050	"	0.0750		94.3	70-130			
1,2,4-Trimethylbenzene	0.0694	0.0050	"	0.0750		92.5	70-130			
1,3,5-Trimethylbenzene	0.0690	0.0050	"	0.0750		92.0	70-130			
Naphthalene	0.0773	0.0038	"	0.0750		103	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0343		"	0.0400		85.6	23-173			
<i>Surrogate: Toluene-d8</i>	0.0469		"	0.0400		117	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0413		"	0.0400		103	21-167			

Matrix Spike (BEJ0134-MS1)

Source: 2110096-01

Prepared: 10/07/21 Analyzed: 10/08/21

Benzene	0.142	0.0020	mg/kg	0.0750	0.0535	118	70-130			
Toluene	0.105	0.0050	"	0.0750	0.0178	116	70-130			
Ethylbenzene	0.0739	0.0050	"	0.0750	ND	98.5	70-130			
m,p-Xylene	0.152	0.010	"	0.150	ND	101	70-130			
o-Xylene	0.0762	0.0050	"	0.0750	ND	102	70-130			
1,2,4-Trimethylbenzene	0.0758	0.0050	"	0.0750	ND	101	70-130			
1,3,5-Trimethylbenzene	0.0756	0.0050	"	0.0750	ND	101	70-130			
Naphthalene	0.0845	0.0038	"	0.0750	ND	113	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0336		"	0.0400		84.1	23-173			
<i>Surrogate: Toluene-d8</i>	0.0436		"	0.0400		109	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0429		"	0.0400		107	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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEJ0134 - EPA 5030 Soil MS

Matrix Spike Dup (BEJ0134-MSD1)	Source: 2110096-01			Prepared: 10/07/21 Analyzed: 10/08/21						
Benzene	0.136	0.0020	mg/kg	0.0750	0.0535	110	70-130	4.27	30	
Toluene	0.0960	0.0050	"	0.0750	0.0178	104	70-130	8.70	30	
Ethylbenzene	0.0677	0.0050	"	0.0750	ND	90.3	70-130	8.68	30	
m,p-Xylene	0.140	0.010	"	0.150	ND	93.5	70-130	7.93	30	
o-Xylene	0.0708	0.0050	"	0.0750	ND	94.4	70-130	7.34	30	
1,2,4-Trimethylbenzene	0.0694	0.0050	"	0.0750	ND	92.6	70-130	8.68	30	
1,3,5-Trimethylbenzene	0.0674	0.0050	"	0.0750	ND	89.9	70-130	11.5	30	
Naphthalene	0.0882	0.0038	"	0.0750	ND	118	70-130	4.27	30	
Surrogate: 1,2-Dichloroethane-d4	0.0362		"	0.0400		90.6	23-173			
Surrogate: Toluene-d8	0.0426		"	0.0400		106	20-170			
Surrogate: 4-Bromofluorobenzene	0.0423		"	0.0400		106	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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BEJ0133 - EPA 3550A

Blank (BEJ0133-BLK1)

Prepared: 10/07/21 Analyzed: 10/08/21

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

LCS (BEJ0133-BS1)

Prepared: 10/07/21 Analyzed: 10/08/21

C10-C28 (DRO)	551	50	mg/kg	500	110	70-130				
---------------	-----	----	-------	-----	-----	--------	--	--	--	--

Matrix Spike (BEJ0133-MS1)

Source: 2110096-01

Prepared: 10/07/21 Analyzed: 10/08/21

C10-C28 (DRO)	546	50	mg/kg	500	12.1	107	70-130			
---------------	-----	----	-------	-----	------	-----	--------	--	--	--

Matrix Spike Dup (BEJ0133-MSD1)

Source: 2110096-01

Prepared: 10/07/21 Analyzed: 10/08/21

C10-C28 (DRO)	542	50	mg/kg	500	12.1	106	70-130	0.737	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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEJ0136 - EPA 5030 Soil MS

Blank (BEJ0136-BLK1)

Prepared: 10/08/21 Analyzed: 10/09/21

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	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0371</i>		"	<i>0.0333</i>		<i>111</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0346</i>		"	<i>0.0333</i>		<i>104</i>		<i>40-150</i>		

LCS (BEJ0136-BS1)

Prepared: 10/08/21 Analyzed: 10/09/21

Acenaphthene	0.0332	0.00500	mg/kg	0.0333	99.7	31-137
Anthracene	0.0306	0.00500	"	0.0333	91.9	30-120
Benzo (a) anthracene	0.0317	0.00500	"	0.0333	95.1	30-120
Benzo (a) pyrene	0.0330	0.00500	"	0.0333	98.9	30-120
Benzo (b) fluoranthene	0.0232	0.00500	"	0.0333	69.6	30-120
Benzo (k) fluoranthene	0.0206	0.00500	"	0.0333	61.8	30-120
Chrysene	0.0320	0.00500	"	0.0333	95.9	30-120
Dibenz (a,h) anthracene	0.0174	0.00500	"	0.0333	52.2	30-120
Fluoranthene	0.0309	0.00500	"	0.0333	92.8	30-120
Fluorene	0.0315	0.00500	"	0.0333	94.5	30-120
Indeno (1,2,3-cd) pyrene	0.0126	0.00500	"	0.0333	37.7	30-120
Pyrene	0.0329	0.00500	"	0.0333	98.6	35-142
1-Methylnaphthalene	0.0337	0.00500	"	0.0333	101	35-142
2-Methylnaphthalene	0.0331	0.00500	"	0.0333	99.3	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0355</i>		"	<i>0.0333</i>	<i>106</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0369</i>		"	<i>0.0333</i>	<i>111</i>	<i>40-150</i>

Summit Scientific

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



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

Project: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEJ0136 - EPA 5030 Soil MS

Matrix Spike (BEJ0136-MS1)	Source: 2110101-01			Prepared: 10/08/21 Analyzed: 10/10/21					
Acenaphthene	0.0232	0.00500	mg/kg	0.0333	ND	69.6	31-137		
Anthracene	0.0211	0.00500	"	0.0333	ND	63.4	30-120		
Benzo (a) anthracene	0.0220	0.00500	"	0.0333	ND	65.9	30-120		
Benzo (a) pyrene	0.0222	0.00500	"	0.0333	ND	66.6	30-120		
Benzo (b) fluoranthene	0.0284	0.00500	"	0.0333	ND	85.1	30-120		
Benzo (k) fluoranthene	0.0296	0.00500	"	0.0333	ND	88.7	30-120		
Chrysene	0.0213	0.00500	"	0.0333	ND	63.9	30-120		
Dibenz (a,h) anthracene	0.0114	0.00500	"	0.0333	ND	34.3	30-120		
Fluoranthene	0.0223	0.00500	"	0.0333	ND	66.9	30-120		
Fluorene	0.0231	0.00500	"	0.0333	ND	69.2	30-120		
Indeno (1,2,3-cd) pyrene	0.0182	0.00500	"	0.0333	ND	54.6	30-120		
Pyrene	0.0225	0.00500	"	0.0333	ND	67.5	35-142		
1-Methylnaphthalene	0.0231	0.00500	"	0.0333	ND	69.4	15-130		
2-Methylnaphthalene	0.0239	0.00500	"	0.0333	ND	71.6	15-130		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0253</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>75.9</i>	<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0264</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>79.1</i>	<i>40-150</i>		

Matrix Spike Dup (BEJ0136-MSD1)	Source: 2110101-01			Prepared: 10/08/21 Analyzed: 10/10/21					
Acenaphthene	0.0257	0.00500	mg/kg	0.0333	ND	77.1	31-137	10.3	30
Anthracene	0.0240	0.00500	"	0.0333	ND	72.1	30-120	12.8	30
Benzo (a) anthracene	0.0257	0.00500	"	0.0333	ND	77.2	30-120	15.9	30
Benzo (a) pyrene	0.0256	0.00500	"	0.0333	ND	76.8	30-120	14.3	30
Benzo (b) fluoranthene	0.0323	0.00500	"	0.0333	ND	97.0	30-120	13.1	30
Benzo (k) fluoranthene	0.0328	0.00500	"	0.0333	ND	98.5	30-120	10.4	30
Chrysene	0.0247	0.00500	"	0.0333	ND	74.0	30-120	14.7	30
Dibenz (a,h) anthracene	0.0153	0.00500	"	0.0333	ND	45.9	30-120	28.7	30
Fluoranthene	0.0242	0.00500	"	0.0333	ND	72.6	30-120	8.09	30
Fluorene	0.0248	0.00500	"	0.0333	ND	74.3	30-120	7.12	30
Indeno (1,2,3-cd) pyrene	0.0175	0.00500	"	0.0333	ND	52.5	30-120	3.94	30
Pyrene	0.0259	0.00500	"	0.0333	ND	77.7	35-142	14.1	30
1-Methylnaphthalene	0.0257	0.00500	"	0.0333	ND	77.0	15-130	10.4	50
2-Methylnaphthalene	0.0263	0.00500	"	0.0333	ND	79.0	15-130	9.85	50
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0281</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>84.2</i>	<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0291</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>87.2</i>	<i>40-150</i>		

Summit Scientific

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



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

Project: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BEJ0150 - EPA 3050B

Blank (BEJ0150-BLK1)

Prepared: 10/08/21 Analyzed: 10/11/21

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 (BEJ0150-BS1)

Prepared: 10/08/21 Analyzed: 10/11/21

Arsenic	47.1	0.200	mg/kg wet	40.0	118	80-120
Barium	40.9	0.400	"	40.0	102	80-120
Cadmium	2.17	0.200	"	2.00	108	80-120
Copper	42.5	0.400	"	40.0	106	80-120
Lead	19.3	0.200	"	20.0	96.6	80-120
Nickel	42.0	0.400	"	40.0	105	80-120
Selenium	4.71	0.260	"	4.00	118	80-120
Silver	2.04	0.0200	"	2.00	102	80-120
Zinc	45.4	0.400	"	40.0	114	80-120

Duplicate (BEJ0150-DUP1)

Source: 2109099-01

Prepared: 10/08/21 Analyzed: 10/11/21

Arsenic	0.692	0.235	mg/kg dry	0.734	5.93	20
Barium	35.4	0.470	"	40.3	12.9	20
Cadmium	0.0421	0.235	"	0.0450	6.71	20
Copper	4.62	0.470	"	4.90	5.89	20
Lead	5.69	0.235	"	5.81	2.05	20
Nickel	4.08	0.470	"	4.18	2.53	20
Selenium	0.455	0.306	"	0.421	7.76	20
Silver	0.0262	0.0235	"	0.0250	4.40	20
Zinc	22.0	0.470	"	23.9	7.97	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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BEJ0150 - EPA 3050B

Matrix Spike (BEJ0150-MS1)

Source: 2109099-01

Prepared: 10/08/21 Analyzed: 10/11/21

Arsenic	50.5	0.235	mg/kg dry	47.0	0.734	106	75-125			
Barium	88.3	0.470	"	47.0	40.3	102	75-125			
Cadmium	2.54	0.235	"	2.35	0.0450	106	75-125			
Copper	47.7	0.470	"	47.0	4.90	91.0	75-125			
Lead	27.2	0.235	"	23.5	5.81	90.8	75-125			
Nickel	46.6	0.470	"	47.0	4.18	90.2	75-125			
Selenium	4.15	0.306	"	4.70	0.421	79.3	75-125			
Silver	2.32	0.0235	"	2.35	0.0250	97.5	75-125			
Zinc	75.9	0.470	"	47.0	23.9	111	75-125			

Matrix Spike Dup (BEJ0150-MSD1)

Source: 2109099-01

Prepared: 10/08/21 Analyzed: 10/11/21

Arsenic	52.4	0.235	mg/kg dry	47.0	0.734	110	75-125	3.79	25
Barium	77.0	0.470	"	47.0	40.3	78.0	75-125	13.7	25
Cadmium	2.65	0.235	"	2.35	0.0450	111	75-125	4.10	25
Copper	49.5	0.470	"	47.0	4.90	94.9	75-125	3.72	25
Lead	28.2	0.235	"	23.5	5.81	95.4	75-125	3.87	25
Nickel	48.4	0.470	"	47.0	4.18	94.0	75-125	3.78	25
Selenium	4.56	0.306	"	4.70	0.421	88.0	75-125	9.43	25
Silver	2.43	0.0235	"	2.35	0.0250	102	75-125	4.72	25
Zinc	77.9	0.470	"	47.0	23.9	115	75-125	2.61	25

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: Willman 42-16 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BEJ0181 - 3060A Mod

Blank (BEJ0181-BLK1)

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BEJ0181-BS1)

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent 28.6 0.30 mg/kg wet 25.0 114 80-120

Duplicate (BEJ0181-DUP1)

Source: 2109464-01

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BEJ0181-MS1)

Source: 2109464-01

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent 31.7 0.30 mg/kg dry 30.1 ND 105 75-125

Matrix Spike Dup (BEJ0181-MSD1)

Source: 2109464-01

Prepared & Analyzed: 10/11/21

Chromium, Hexavalent 31.8 0.30 mg/kg dry 30.1 ND 106 75-125 0.379 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: Willman 42-16 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 10/12/21 16:10

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

Summit Scientific

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

Batch BEJ0168 - General Preparation

Duplicate (BEJ0168-DUP1)

Source: 2110099-01

Prepared & Analyzed: 10/11/21

% Solids	91.3		%		90.2			1.12		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: Willman 42-16 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/21 16:10

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