PDC Energy, Inc.
Fourth Quarter 2022 Groundwater Monitoring Summary

December 15, 2022

Former Willman 42-16 Wellhead
SENE Section 16 T4N R65W
Remediation # 18936

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Willman 42-16 Wellhead.

Site History and Background

On September 30, 2021, a historic hydrocarbon release was discovered at the wellhead location during decommissioning activities. Following the discovery, mitigation activities were initiated, and on October 7, 2021, approximately 35 cubic yards of impacted material were removed from the former excavation. During excavation activities, groundwater was encountered in the excavation at approximately 6 feet below ground surface (bgs). Groundwater vacuum recovery operations were conducted concurrent with excavation activities and approximately 5 barrels of groundwater were removed from site. On June 7, 2022, five monitoring wells (BH01 – BH05) were installed via hand auger to confirm the absence of dissolved-phase hydrocarbon impacts within and adjacent to the former excavation extent.

Groundwater Monitoring Activities

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

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

Current Remediation Activities and Path Forward

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the second quarter 2022 and will remain the selected remediation strategy through the first quarter 2023.

First quarter 2023 groundwater sampling will be conducted in March 2023.

BH01		
Compound (µg/L)	9/22/2022	12/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1, 2, 4-TMB	<1.0	<1.0
1, 3, 5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	0.35	4.50

BH02		
Compound (µg/L)	9/22/2022	12/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1, 2, 4-TMB	<1.0	<1.0
1, 3, 5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	0.38	4.78

BH03		
Compound (µg/L)	9/22/2022	12/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1, 2, 4-TMB	<1.0	<1.0
1, 3, 5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	0.25	4.69

BH04		
Compound (µg/L)	9/22/2022	12/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1, 2, 4-TMB	<1.0	<1.0
1, 3, 5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	0.42	4.73

BH05		
Compound (µg/L)	9/22/2022	12/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1, 2, 4-TMB	<1.0	<1.0
1, 3, 5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	0.35	4.83

BH02

BH03

BH01

BH05

BH04

Legend

- Underground Flowline Location (Collected via Trimble GPS)
- Excavation Extent (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (4Q22)

Notes

All locations are approximate unless otherwise noted.

µg/L – Micrograms per liter

TMB – Trimethylbenzene

ft. bgs – feet below ground surface

GPS – Global Positioning System

0 ft. 10 ft. 20 ft.

N

Image Source: Google Earth; July 2019
Projection: WGS 84 UTM Zone 13 North

DATE: January 5, 2023

DESIGNED BY: C. Hamlin

DRAWN BY: G. Semenza

TASMAN

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

PDC Energy, Inc. – DJ Basin
Former Willman 42-16 Wellhead
SENE, Section 16, Township 4 North, Range 65 West
Weld County, Colorado

GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 1

BH01		
Compound (mg/L)	9/22/2022	12/2/2022
Chloride	234	**270**
Sulfate	**441**	**296**
TDS	1,560	1,270
Depth to Water (ft. bgs)	0.35	4.50

BH02		
Compound (mg/L)	9/22/2022	12/2/2022
Chloride	359	**333**
Sulfate	603	**502**
TDS	2,010	1,580
Depth to Water (ft. bgs)	0.38	4.78

BH03		
Compound (mg/L)	9/22/2022	12/2/2022
Chloride	296	398
Sulfate	398	472
TDS	1,580	1,560
Depth to Water (ft. bgs)	0.25	4.69

BH04		
Compound (mg/L)	9/22/2022	12/2/2022
Chloride	231	**319**
Sulfate	**291**	**349**
TDS	1,250	1,320
Depth to Water (ft. bgs)	0.42	4.73

BH05		
Compound (mg/L)	9/22/2022	12/2/2022
Chloride	**340**	**303**
Sulfate	**476**	**375**
TDS	1,830	1,230
Depth to Water (ft. bgs)	0.35	4.83

BH01 BH02 BH03 BH04 BH05

Legend

- Underground Flowline Location (Collected via Trimble GPS)
- Excavation Extent (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (4Q22)

Notes

All locations are approximate unless otherwise noted.

mg/L – Milligrams per liter

TDS – Total Dissolved Solids

ft. bgs – Feet below ground surface

GPS – Global Positioning System

Black Bold text – exceedances of COGCC Table 915-1 standards, but within 1.25x background concentrations

COGCC – Colorado Oil and Gas Conservation Commission

0 ft. 10 ft. 20 ft.

N

Image Source: Google Earth; July 2019
Projection: WGS 84 UTM Zone 13 North

DATE: January 5, 2023

DESIGNED BY: C. Hamlin

DRAWN BY: G. Semenza

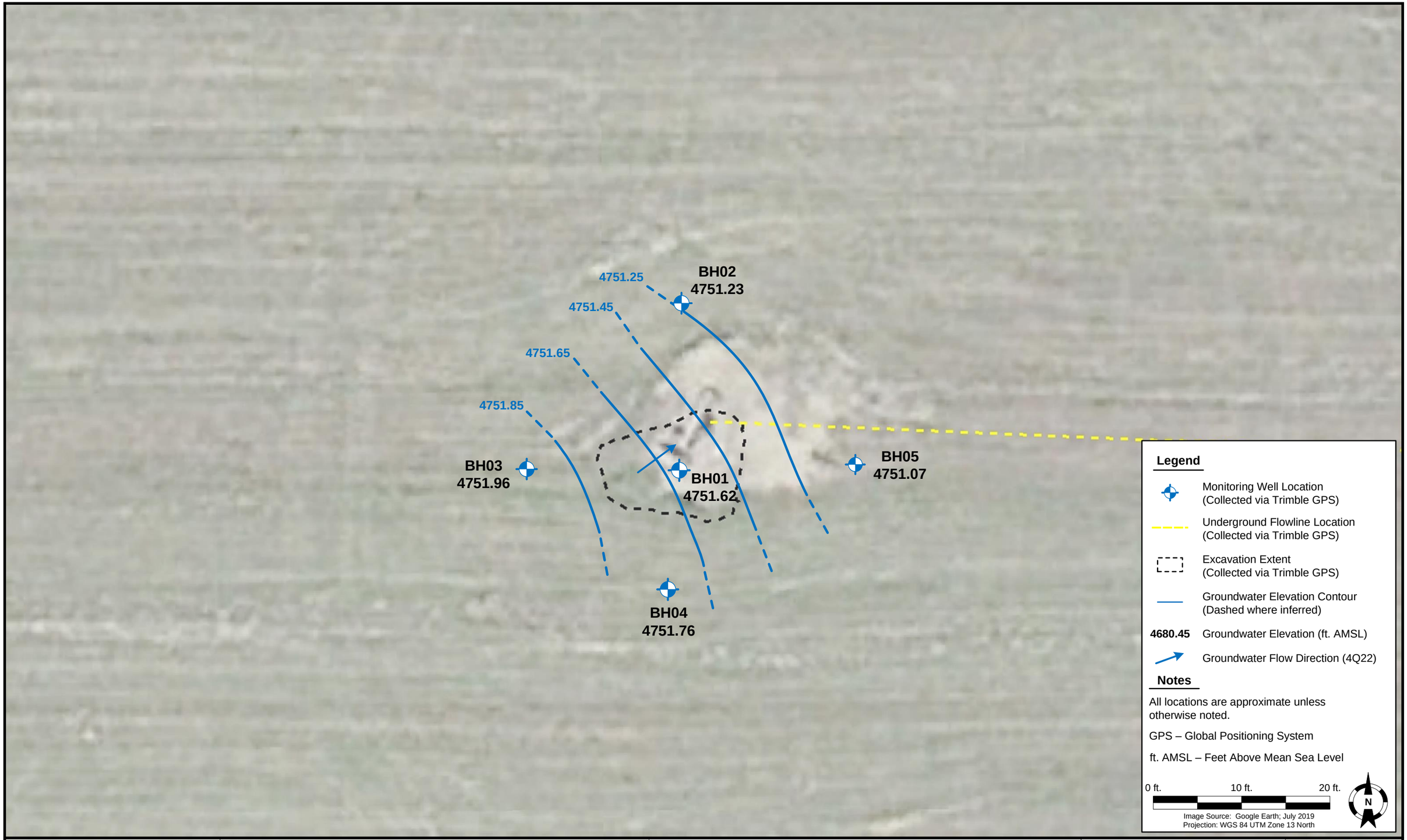
TASMAN

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

PDC Energy, Inc. – DJ Basin
Former Willman 42-16 Wellhead
SENE, Section 16, Township 4 North, Range 65 West
Weld County, Colorado

GROUNDWATER ANALYTICAL RESULTS MAP (INORGANIC PARAMETERS)

FIGURE 2



DATE: January 4, 2023 DESIGNED BY: C. Hamlin DRAWN BY: J. Marcus	TASMAN **Tasman, Inc.** 6855 W. 119th Ave. Broomfield, CO 80020	**PDC Energy, Inc. – DJ Basin** **Former Willman 42-16 Wellhead** SENE, Section 16, Township 4 North, Range 65 West Weld County, Colorado	GROUNDWATER ELEVATION CONTOUR MAP (12/02/2022)	FIGURE 3

TABLE 1
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**	**-**	**-**
BH01	6/10/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.50	4752.62
BH01	9/22/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.35	4755.77
BH01	12/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.50	4751.62
BH02	6/10/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.56	4752.45
BH02	9/22/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.38	4755.63
BH02	12/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.78	4751.23
BH03	6/10/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.61	4753.04
BH03	9/22/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.25	4756.40
BH03	12/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.69	4751.96
BH04	6/10/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.59	4752.90
BH04	9/22/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.42	4756.07
BH04	12/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.73	4751.76
BH05	6/10/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.64	4752.26
BH05	9/22/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.35	4755.55
BH05	12/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.83	4751.07

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

TABLE 2
FORMER WILLMAN 42-16 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC PARAMETERS

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water [2] (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) [1]		**<1.25 x BCKG**	**250 or <1.25 x BCKG**	**250 or <1.25 x BCKG**	**-**	**-**
BH01	6/10/2022	1,900	**311**	**631**	3.50	4752.62
BH01	9/22/2022	1,560	234	**441**	0.35	4755.77
BH01	12/2/2022	1,270	**270**	**296**	4.50	4751.62
BH02	6/10/2022	2,010	**417**	**422**	3.56	4752.45
BH02	9/22/2022	**2,010**	**359**	**603**	0.38	4755.63
BH02	12/2/2022	1,580	**333**	**502**	4.78	4751.23
BH03	6/10/2022	1,630	324	309	3.61	4753.04
BH03	9/22/2022	1,580	296	398	0.25	4756.40
BH03	12/2/2022	1,560	398	472	4.69	4751.96
BH04	6/10/2022	1,530	**325**	**321**	3.59	4752.90
BH04	9/22/2022	1,250	231	**291**	0.42	4756.07
BH04	12/2/2022	1,320	**319**	**349**	4.73	4751.76
BH05	6/10/2022	1,440	**279**	**252**	3.64	4752.26
BH05	9/22/2022	1,830	**340**	**476**	0.35	4755.55
BH05	12/2/2022	1,230	**303**	**375**	4.83	4751.07

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.

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background

mg/L = Milligrams per liter

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

ft. = Feet

AMSL = Above Mean Sea Level

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

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

BOLD = Analytical result is in exceedance of applicable standard but within 1.25x the background

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 12, 2022

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

RE: Willman 42-16 Wellhead
Work Order #2212067

Enclosed are the results of analyses for samples received by Summit Scientific on 12/02/22 17:52. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Sheely 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:** 12/12/22 13:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2212067-01	Water	12/02/22 13:45	12/02/22 17:52
BH02	2212067-02	Water	12/02/22 13:05	12/02/22 17:52
BH03	2212067-03	Water	12/02/22 13:15	12/02/22 17:52
BH04	2212067-04	Water	12/02/22 13:25	12/02/22 17:52
BH05	2212067-05	Water	12/02/22 13:35	12/02/22 17:52

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

2212067

S2

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

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

Project Manager: Mark Longhurst
E-Mail: Mark.longhurst@pdce.com
Project Name: Willman 42-16 well head
Project Number:

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other ___	Water	Soil	Air-Canister #	Other ___	BTEXN -8260B	TPH-(C6-C36)	TMB's(1,2,4)&(1,3,5)	Boron - HWS	pH, EC, SAR	PAH - 915	Metals - 915	TDS, Cl, SO4	
1	BH01	12/1/2022	1345	4	3		1		X				X		X					X	
2	BH02	"	1305	"	"		"		"				"		"					"	
3	BH03	"	1315	"	"		"		"				"		"					"	
4	BH04	"	1325	"	"		"		"				"		"					"	
5	BH05	"	1335	"	"		"		"				"		"					"	
6																					
7																					
8																					
9																					
10																					

Relinquished by:	Date/Time:	Received by:	Date/Time:
Chase J	12/1/2022 1535	Tasman Lockbox	12/1/2022 1535
Relinquished by:	Date/Time:	Received by:	Date/Time:
Tasman Lockbox	12222 1752		12222 1752
Relinquished by:	Date/Time:	Received by:	Date/Time:

Turn Around Time (Check)

Same Day	___	72 hours	___
24 hours	___	Standard	X
48 hours	___		

Sample Integrity:
Temperature Upon Receipt: Ce .1
Samples Intact: Yes No

Notes:

S2

Sample Receipt Checklist

S2 Work Order# 22/2067

Client: Pactasman 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 [ ]

Temp (°C) [0.1] Thermometer # [1]

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? (1) **NOTE:** If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	—			ONICE
If custody seals are present, are they intact? (1)	—			
Are samples due within 48 hours present?		—		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe^{2+}), Hexavalent Chromium (Cr^{6+}, Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			—	
Is a chain-of-custody (COC) form present and filled out Completely? (1)	✓			
Is the COC properly relinquished by the client w/ date and time recorded? (1)	—			
Were all samples received intact? (1)	—			
Was adequate sample volume provided? (1)	—			
Does the COC agree with the number and type of sample bottles received? (1)	—			
Do the sample IDs on the bottle labels match the COC? (1)	—			
For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.**		—		
Are samples preserved that require preservation **(excluding cooling)?** (1) Note the type of preservative in the comments column – HCl, H_2SO_4, NaOH, HNO_3, etc.	—			HCl
If samples are acid preserved for metals, is the pH ≤ 2? (1) Record the pH in Comments.			—	
If dissolved metals are requested, were samples field filtered?			—	
Additional Comments (if any):				
(1) **If NO, then contact the client before proceeding with analysis and note in case narrative.**				

Custodian Printed Name

12-2-22
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:** 12/12/22 13:35

BH01

2212067-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/02/22 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFL0118	12/05/22	12/06/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/02/22 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	15.0	*113 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8	13.4	*100 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.2	*106 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **12/02/22 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**270**	12.0	mg/L	200	BFL0148	12/07/22	12/07/22	EPA 300.0	
Sulfate	**296**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **12/02/22 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1270**	10.0	mg/L	1	BFL0121	12/05/22	12/05/22	SM2540C	

Summit Scientific

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

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

BH02

2212067-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/02/22 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFL0118	12/05/22	12/06/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/02/22 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	15.5	*116 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8	13.2	*99.3 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	*105 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **12/02/22 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**333**	12.0	mg/L	200	BFL0148	12/07/22	12/07/22	EPA 300.0	
Sulfate	**502**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **12/02/22 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1580**	10.0	mg/L	1	BFL0121	12/05/22	12/05/22	SM2540C	

Summit Scientific

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

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

BH03

2212067-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/02/22 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFL0118	12/05/22	12/06/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/02/22 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	15.0	*112 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8	13.2	*98.9 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.1	*106 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **12/02/22 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**398**	12.0	mg/L	200	BFL0148	12/07/22	12/07/22	EPA 300.0	
Sulfate	**472**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **12/02/22 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1560**	10.0	mg/L	1	BFL0121	12/05/22	12/05/22	SM2540C	

Summit Scientific

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

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

BH04

2212067-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/02/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFL0118	12/05/22	12/06/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/02/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	14.4	*108 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8	13.3	*99.7 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	*105 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **12/02/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**319**	12.0	mg/L	200	BFL0148	12/07/22	12/07/22	EPA 300.0	
Sulfate	**349**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **12/02/22 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1320**	10.0	mg/L	1	BFL0121	12/05/22	12/05/22	SM2540C	

Summit Scientific

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

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

BH05

2212067-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/02/22 13:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFL0118	12/05/22	12/06/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/02/22 13:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	16.2	*121 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8	13.3	*99.5 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	*105 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **12/02/22 13:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**303**	12.0	mg/L	200	BFL0148	12/07/22	12/07/22	EPA 300.0	
Sulfate	**375**	60.0	"	"	"	"	"	"	

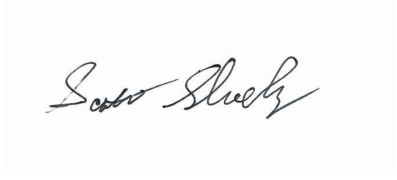
Total Dissolved Solids by SM2540C

Date Sampled: **12/02/22 13:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1230**	10.0	mg/L	1	BFL0121	12/05/22	12/05/22	SM2540C	

Summit Scientific

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

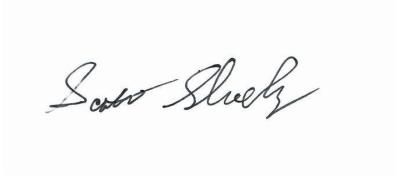


PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFL0118 - EPA 5030 Water MS										
Blank (BFL0118-BLK1)				Prepared: 12/05/22 Analyzed: 12/07/22						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	*14.6*		"	*13.3*		*110*	*23-173*			
Surrogate: Toluene-d8	*13.4*		"	*13.3*		*101*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*14.3*		"	*13.3*		*107*	*21-167*			
LCS (BFL0118-BS1)				Prepared: 12/05/22 Analyzed: 12/07/22						
Benzene	42.4	1.0	ug/l	41.7		102	51-132			
Toluene	41.0	1.0	"	41.7		98.3	51-138			
Ethylbenzene	44.0	1.0	"	41.7		106	58-146			
m,p-Xylene	85.4	2.0	"	83.3		103	57-144			
o-Xylene	41.4	1.0	"	41.7		99.5	53-146			
Naphthalene	34.0	1.0	"	41.7		81.5	70-130			
1,2,4-Trimethylbenzene	44.2	1.0	"	41.7		106	70-130			
1,3,5-Trimethylbenzene	45.9	1.0	"	41.7		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	*14.2*		"	*13.3*		*107*	*23-173*			
Surrogate: Toluene-d8	*13.2*		"	*13.3*		*99.1*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.7*		"	*13.3*		*103*	*21-167*			
Matrix Spike (BFL0118-MS1)	**Source: 2212030-01**			Prepared: 12/05/22 Analyzed: 12/07/22						
Benzene	43.4	1.0	ug/l	41.7	ND	104	34-141			
Toluene	42.1	1.0	"	41.7	ND	101	27-151			
Ethylbenzene	44.7	1.0	"	41.7	ND	107	29-160			
m,p-Xylene	87.0	2.0	"	83.3	ND	104	20-166			
o-Xylene	42.3	1.0	"	41.7	ND	102	33-159			
Naphthalene	35.8	1.0	"	41.7	ND	85.8	70-130			
1,2,4-Trimethylbenzene	44.4	1.0	"	41.7	ND	106	70-130			
1,3,5-Trimethylbenzene	46.0	1.0	"	41.7	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	*14.6*		"	*13.3*		*110*	*23-173*			
Surrogate: Toluene-d8	*13.4*		"	*13.3*		*100*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.6*		"	*13.3*		*102*	*21-167*			



PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFL0118 - EPA 5030 Water MS										
Matrix Spike Dup (BFL0118-MSD1)	**Source: 2212030-01**			Prepared: 12/05/22 Analyzed: 12/07/22						
Benzene	42.5	1.0	ug/l	41.7	ND	102	34-141	2.12	30	
Toluene	41.5	1.0	"	41.7	ND	99.6	27-151	1.36	30	
Ethylbenzene	44.6	1.0	"	41.7	ND	107	29-160	0.202	30	
m,p-Xylene	85.8	2.0	"	83.3	ND	103	20-166	1.37	30	
o-Xylene	42.0	1.0	"	41.7	ND	101	33-159	0.807	30	
Naphthalene	34.2	1.0	"	41.7	ND	82.0	70-130	4.52	30	
1,2,4-Trimethylbenzene	44.3	1.0	"	41.7	ND	106	70-130	0.135	30	
1,3,5-Trimethylbenzene	45.8	1.0	"	41.7	ND	110	70-130	0.435	30	
Surrogate: 1,2-Dichloroethane-d4	*14.4*		*"*	*13.3*		*108*	*23-173*			
Surrogate: Toluene-d8	*13.3*		*"*	*13.3*		*99.7*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.7*		*"*	*13.3*		*103*	*21-167*			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFL0148 - General Preparation										
Blank (BFL0148-BLK1)				Prepared & Analyzed: 12/07/22						
Chloride	ND	0.0600	mg/L							
Sulfate	ND	0.300	"							
LCS (BFL0148-BS1)				Prepared & Analyzed: 12/07/22						
Chloride	3.28	0.0600	mg/L	3.00		109	90-110			
Sulfate	16.1	0.300	"	15.0		107	90-110			
Duplicate (BFL0148-DUP1)	**Source: 2212066-01**			Prepared & Analyzed: 12/07/22						
Chloride	245	12.0	mg/L		272			10.5	20	
Sulfate	1200	60.0	"		1320			9.54	20	
Matrix Spike (BFL0148-MS1)	**Source: 2212066-01**			Prepared & Analyzed: 12/07/22						
Chloride	844	12.0	mg/L	600	272	95.3	80-120			
Sulfate	4330	60.0	"	3000	1320	100	80-120			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFL0121 - General Preparation										
Blank (BFL0121-BLK1)				Prepared & Analyzed: 12/05/22						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (BFL0121-DUP1)		**Source: 2212066-01**		Prepared & Analyzed: 12/05/22						
Total Dissolved Solids	1950	10.0	mg/L		1910			1.71	20	

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Willman 42-16 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 12/12/22 13:35

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