

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 10, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: McKenney 6-42 Wellhead

Work Order #2108147

Enclosed are the results of analyses for samples received by Summit Scientific on 08/10/21 17:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury
President



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

Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2108147-01	Soil	08/10/21 10:06	08/10/21 17:50
FLR01@4'	2108147-02	Soil	08/10/21 10:08	08/10/21 17:50
BKG01@4'	2108147-03	Soil	08/10/21 10:12	08/10/21 17:50
BKG01@6'	2108147-04	Soil	08/10/21 10:17	08/10/21 17:50

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2108147

Page 1 of 1

Project Number:

Notes:

Sample Receipt Checklist

S2 Work Order 2108147

Client: PDC/TASMAN

Client Project ID: Mt Kenney 6-42 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>10</u>
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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 provided that 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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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, ect	<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.

WLG
Custodian Printed Name or Initials

Will Galt
Signature of Custodian

8/10/21
Date/Time



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

Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

WH01@6'
2108147-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEH0209	08/13/21	08/15/21	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: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		109 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEH0211	08/13/21	08/14/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		80.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Denver CO, 80203

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
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WH01@6'
2108147-01 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEH0233	08/16/21	08/17/21	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	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		88.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		70.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.133	0.0100	mg/L	1	BEH0166	08/11/21	08/14/21	EPA 6020B	

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

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WH01@6'
2108147-01 (Soil)

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

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	44.0	0.0608	mg/L dry	1	BEH0194	08/12/21	08/17/21	EPA 6020B	
Magnesium	23.8	0.0608	"	"	"	"	"	"	
Sodium	140	0.0608	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.23	0.00100	units	1	BEH0293	08/18/21	08/18/21	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	82.3		%	1	BEH0257	08/16/21	08/17/21	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Specific Conductance (EC)	0.883	0.0100	mmhos/cm	1	BEH0202	08/13/21	08/13/21	EPA 120.1	

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

Date Sampled: **08/10/21 10:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.21		pH Units	1	BEH0201	08/13/21	08/13/21	EPA 9045D	

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Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

FLR01@4'
2108147-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEH0209	08/13/21	08/15/21	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: **08/10/21 10:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		110 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEH0211	08/13/21	08/14/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		89.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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FLR01@4'
2108147-02 (Soil)

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PAH by EPA Method 8270D SIM

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEH0233	08/16/21	08/17/21	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	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		84.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		63.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.248	0.0100	mg/L	1	BEH0166	08/11/21	08/14/21	EPA 6020B	

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

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Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

FLR01@4'
2108147-02 (Soil)

Summit Scientific

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

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	26.1	0.0581	mg/L dry	1	BEH0194	08/12/21	08/17/21	EPA 6020B	
Magnesium	13.0	0.0581	"	"	"	"	"	"	
Sodium	102	0.0581	"	"	"	"	"	"	

Calculated Analysis

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.07	0.00100	units	1	BEH0293	08/18/21	08/18/21	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	86.0		%	1	BEH0257	08/16/21	08/17/21	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Specific Conductance (EC)	0.669	0.0100	mmhos/cm	1	BEH0202	08/13/21	08/13/21	EPA 120.1	

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

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.40		pH Units	1	BEH0201	08/13/21	08/13/21	EPA 9045D	

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Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

BKG01@4'
2108147-03 (Soil)

Summit Scientific

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

Date Sampled: **08/10/21 10:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.94			pH Units	1	BEH0444	08/25/21	08/25/21	EPA 9045D	

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Project: McKenney 6-42 Wellhead
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Reported:
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BKG01@6'
2108147-04 (Soil)

Summit Scientific

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

Date Sampled: **08/10/21 10:17**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.67			pH Units	1	BEH0444	08/25/21	08/25/21	EPA 9045D	

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Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

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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 BEH0209 - EPA 5030 Soil MS

Blank (BEH0209-BLK1)

Prepared & Analyzed: 08/13/21

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	0.0432		"	0.0400		108	23-173			
Surrogate: Toluene-d8	0.0434		"	0.0400		108	20-170			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	21-167			

LCS (BEH0209-BS1)

Prepared & Analyzed: 08/13/21

Benzene	0.121	0.0020	mg/kg	0.100		121	70-130			
Toluene	0.113	0.0050	"	0.100		113	70-130			
Ethylbenzene	0.0981	0.0050	"	0.100		98.1	70-130			
m,p-Xylene	0.194	0.010	"	0.200		96.8	70-130			
o-Xylene	0.0941	0.0050	"	0.100		94.1	70-130			
1,2,4-Trimethylbenzene	0.0980	0.0050	"	0.100		98.0	70-130			
1,3,5-Trimethylbenzene	0.0977	0.0050	"	0.100		97.7	70-130			
Naphthalene	0.114	0.0038	"	0.100		114	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0461		"	0.0400		115	23-173			
Surrogate: Toluene-d8	0.0442		"	0.0400		110	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	21-167			

Matrix Spike (BEH0209-MS1)

Source: 2108147-01

Prepared & Analyzed: 08/13/21

Benzene	0.117	0.0020	mg/kg	0.100	ND	117	70-130			
Toluene	0.109	0.0050	"	0.100	ND	109	70-130			
Ethylbenzene	0.0952	0.0050	"	0.100	ND	95.2	70-130			
m,p-Xylene	0.187	0.010	"	0.200	ND	93.4	70-130			
o-Xylene	0.0900	0.0050	"	0.100	ND	90.0	70-130			
1,2,4-Trimethylbenzene	0.0913	0.0050	"	0.100	ND	91.3	70-130			
1,3,5-Trimethylbenzene	0.0914	0.0050	"	0.100	ND	91.4	70-130			
Naphthalene	0.108	0.0038	"	0.100	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0460		"	0.0400		115	23-173			
Surrogate: Toluene-d8	0.0443		"	0.0400		111	20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.5	21-167			

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Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

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09/10/21 14:04

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 BEH0209 - EPA 5030 Soil MS

Matrix Spike Dup (BEH0209-MSD1)	Source: 2108147-01			Prepared & Analyzed: 08/13/21						
Benzene	0.117	0.0020	mg/kg	0.100	ND	117	70-130	0.359	30	
Toluene	0.109	0.0050	"	0.100	ND	109	70-130	0.220	30	
Ethylbenzene	0.0964	0.0050	"	0.100	ND	96.4	70-130	1.22	30	
m,p-Xylene	0.190	0.010	"	0.200	ND	95.0	70-130	1.67	30	
o-Xylene	0.0910	0.0050	"	0.100	ND	91.0	70-130	1.13	30	
1,2,4-Trimethylbenzene	0.0938	0.0050	"	0.100	ND	93.8	70-130	2.76	30	
1,3,5-Trimethylbenzene	0.0934	0.0050	"	0.100	ND	93.4	70-130	2.11	30	
Naphthalene	0.111	0.0038	"	0.100	ND	111	70-130	2.47	30	
Surrogate: 1,2-Dichloroethane-d4	0.0464		"	0.0400		116	23-173			
Surrogate: Toluene-d8	0.0442		"	0.0400		111	20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.6	21-167			

Summit Scientific

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

Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BEH0211 - EPA 3550A

Blank (BEH0211-BLK1)

Prepared: 08/13/21 Analyzed: 08/14/21

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

LCS (BEH0211-BS1)

Prepared: 08/13/21 Analyzed: 08/14/21

C10-C28 (DRO)	520	50	mg/kg	500	104	70-130					
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Matrix Spike (BEH0211-MS1)

Source: 2108147-01

Prepared: 08/13/21 Analyzed: 08/14/21

C10-C28 (DRO)	532	50	mg/kg	500	13.8	104	70-130				
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Matrix Spike Dup (BEH0211-MSD1)

Source: 2108147-01

Prepared: 08/13/21 Analyzed: 08/14/21

C10-C28 (DRO)	519	50	mg/kg	500	13.8	101	70-130	2.45	20		
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Summit Scientific

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

Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEH0233 - EPA 5030 Soil MS

Blank (BEH0233-BLK1)

Prepared & Analyzed: 08/16/21

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	"							
Naphthalene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0330		"	0.0333		99.1	40-150			
Surrogate: Fluoranthene-d10	0.0231		"	0.0333		69.4	40-150			

LCS (BEH0233-BS1)

Prepared & Analyzed: 08/16/21

Acenaphthene	0.0241	0.00500	mg/kg	0.0333		72.4	31-137			
Anthracene	0.0223	0.00500	"	0.0333		66.8	30-120			
Benzo (a) anthracene	0.0239	0.00500	"	0.0333		71.7	30-120			
Benzo (a) pyrene	0.0237	0.00500	"	0.0333		71.0	30-120			
Benzo (b) fluoranthene	0.0208	0.00500	"	0.0333		62.3	30-120			
Benzo (k) fluoranthene	0.0265	0.00500	"	0.0333		79.6	30-120			
Chrysene	0.0234	0.00500	"	0.0333		70.1	30-120			
Dibenz (a,h) anthracene	0.0293	0.00500	"	0.0333		87.8	30-120			
Fluoranthene	0.0222	0.00500	"	0.0333		66.7	30-120			
Fluorene	0.0255	0.00500	"	0.0333		76.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0295	0.00500	"	0.0333		88.4	30-120			
Naphthalene	0.0254	0.00500	"	0.0333		76.3	30-120			
Pyrene	0.0225	0.00500	"	0.0333		67.5	35-142			
1-Methylnaphthalene	0.0242	0.00500	"	0.0333		72.5	35-142			
2-Methylnaphthalene	0.0210	0.00500	"	0.0333		62.9	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0307		"	0.0333		92.1	40-150			
Surrogate: Fluoranthene-d10	0.0247		"	0.0333		74.1	40-150			

Summit Scientific

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

Project: McKenney 6-42 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEH0233 - EPA 5030 Soil MS

Matrix Spike (BEH0233-MS1)

Source: 2108094-01

Prepared & Analyzed: 08/16/21

Acenaphthene	0.0221	0.00500	mg/kg	0.0333	ND	66.3	31-137		
Anthracene	0.0200	0.00500	"	0.0333	ND	60.0	30-120		
Benzo (a) anthracene	0.0206	0.00500	"	0.0333	ND	61.7	30-120		
Benzo (a) pyrene	0.0206	0.00500	"	0.0333	ND	61.8	30-120		
Benzo (b) fluoranthene	0.0219	0.00500	"	0.0333	ND	65.7	30-120		
Benzo (k) fluoranthene	0.0229	0.00500	"	0.0333	ND	68.8	30-120		
Chrysene	0.0201	0.00500	"	0.0333	ND	60.3	30-120		
Dibenz (a,h) anthracene	0.0250	0.00500	"	0.0333	ND	74.9	30-120		
Fluoranthene	0.0202	0.00500	"	0.0333	ND	60.6	30-120		
Fluorene	0.0232	0.00500	"	0.0333	ND	69.7	30-120		
Indeno (1,2,3-cd) pyrene	0.0250	0.00500	"	0.0333	ND	74.9	30-120		
Naphthalene	0.0224	0.00500	"	0.0333	ND	67.1	30-120		
Pyrene	0.0184	0.00500	"	0.0333	ND	55.2	35-142		
1-Methylnaphthalene	0.0203	0.00500	"	0.0333	ND	60.9	15-130		
2-Methylnaphthalene	0.0183	0.00500	"	0.0333	ND	54.9	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0278		"	0.0333		83.5	40-150		
Surrogate: Fluoranthene-d10	0.0223		"	0.0333		66.9	40-150		

Matrix Spike Dup (BEH0233-MSD1)

Source: 2108094-01

Prepared & Analyzed: 08/16/21

Acenaphthene	0.0237	0.00500	mg/kg	0.0333	ND	71.0	31-137	6.82	30
Anthracene	0.0228	0.00500	"	0.0333	ND	68.3	30-120	13.0	30
Benzo (a) anthracene	0.0257	0.00500	"	0.0333	ND	77.1	30-120	22.3	30
Benzo (a) pyrene	0.0248	0.00500	"	0.0333	ND	74.3	30-120	18.5	30
Benzo (b) fluoranthene	0.0234	0.00500	"	0.0333	ND	70.1	30-120	6.49	30
Benzo (k) fluoranthene	0.0254	0.00500	"	0.0333	ND	76.4	30-120	10.5	30
Chrysene	0.0251	0.00500	"	0.0333	ND	75.3	30-120	22.1	30
Dibenz (a,h) anthracene	0.0302	0.00500	"	0.0333	ND	90.6	30-120	18.9	30
Fluoranthene	0.0219	0.00500	"	0.0333	ND	65.7	30-120	8.09	30
Fluorene	0.0251	0.00500	"	0.0333	ND	75.3	30-120	7.73	30
Indeno (1,2,3-cd) pyrene	0.0300	0.00500	"	0.0333	ND	90.0	30-120	18.4	30
Naphthalene	0.0242	0.00500	"	0.0333	ND	72.6	30-120	7.84	30
Pyrene	0.0231	0.00500	"	0.0333	ND	69.3	35-142	22.7	30
1-Methylnaphthalene	0.0232	0.00500	"	0.0333	ND	69.7	15-130	13.4	50
2-Methylnaphthalene	0.0192	0.00500	"	0.0333	ND	57.7	15-130	4.94	50
Surrogate: 2-Methylnaphthalene-d10	0.0304		"	0.0333		91.2	40-150		
Surrogate: Fluoranthene-d10	0.0256		"	0.0333		76.8	40-150		

Summit Scientific

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

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

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

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

Batch BEH0166 - EPA 3050B

Blank (BEH0166-BLK1)

Prepared: 08/11/21 Analyzed: 08/14/21

Boron ND 0.0100 mg/L

LCS (BEH0166-BS1)

Prepared: 08/11/21 Analyzed: 08/14/21

Boron 4.89 0.0100 mg/L 5.00 97.7 80-120

Duplicate (BEH0166-DUP1)

Source: 2107463-03

Prepared: 08/11/21 Analyzed: 08/14/21

Boron 0.874 0.0100 mg/L 0.832 4.96 20

Matrix Spike (BEH0166-MS1)

Source: 2107463-03

Prepared: 08/11/21 Analyzed: 08/14/21

Boron 5.71 0.0100 mg/L 5.00 0.832 97.6 75-125

Matrix Spike Dup (BEH0166-MSD1)

Source: 2107463-03

Prepared: 08/11/21 Analyzed: 08/14/21

Boron 5.75 0.0100 mg/L 5.00 0.832 98.3 75-125 0.555 25

Summit Scientific

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

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

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

Summit Scientific

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

Batch BEH0194 - General Preparation

Blank (BEH0194-BLK1)

Prepared: 08/12/21 Analyzed: 08/17/21

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

LCS (BEH0194-BS1)

Prepared: 08/12/21 Analyzed: 08/17/21

Calcium	5.31	0.0500	mg/L wet	5.00	106	70-130
Magnesium	5.04	0.0500	"	5.00	101	70-130
Sodium	4.98	0.0500	"	5.00	99.6	70-130

Summit Scientific

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

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

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

Summit Scientific

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

Batch BEH0257 - General Preparation

Duplicate (BEH0257-DUP1)		Source: 2108126-01		Prepared: 08/16/21 Analyzed: 08/17/21	
% Solids	87.1		%	85.3	2.06 20

Summit Scientific

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

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

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

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

Batch BEH0202 - General Preparation

Blank (BEH0202-BLK1)

Prepared & Analyzed: 08/13/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BEH0202-BS1)

Prepared & Analyzed: 08/13/21

Specific Conductance (EC) 0.148 0.0100 mmhos/cm 0.150 98.4 90-110

Duplicate (BEH0202-DUP1)

Source: 2108107-09

Prepared & Analyzed: 08/13/21

Specific Conductance (EC) 1.61 0.0100 mmhos/cm 1.62 0.433 20

Summit Scientific

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

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

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

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

Batch BEH0201 - General Preparation

LCS (BEH0201-BS1)

Prepared & Analyzed: 08/13/21

pH	9.26		pH Units	9.21	101	95-105
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Duplicate (BEH0201-DUP1)

Source: 2108107-09

Prepared & Analyzed: 08/13/21

pH	8.95		pH Units	8.96		0.112	20
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Batch BEH0444 - General Preparation

LCS (BEH0444-BS1)

Prepared & Analyzed: 08/25/21

pH	9.18		pH Units	9.21	99.7	95-105
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Duplicate (BEH0444-DUP1)

Source: 2108147-03

Prepared & Analyzed: 08/25/21

pH	8.96		pH Units	8.94		0.223	20
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Summit Scientific

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

Project: McKenney 6-42 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/10/21 14:04

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