

Analytical Results  
Former Duke J 4-33 Wellhead

TABLE 1 FORMER DUKE J 4-33 TANK BATTERY 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 <sup>(4)</sup> (mg/kg)	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)	pH (units)	SAR (units)
Residential SSL <sup>(1,2)</sup>			1.2	490	5.8	58	30	27	2	500	360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24	--	--
Protection of Groundwater SSL <sup>(1,2,3)</sup>			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	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	--	--
Soil Suitability for Reclamation Standard <sup>(1)</sup>			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6-8.3	<6
WH01 @ 6'	12/3/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	0.0118	0.0196	<0.00500	0.0322	0.0144	0.0220	<0.00500	0.0589	<0.00500	<0.00500	0.0911	<0.00500	<0.00500	8.13	6.79
FLR01 @ 4'	12/3/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	700	0.496	1.10	2.70	1.75	2.93	1.20	2.96	0.226	2.12	0.636	0.924	10.7	0.0466	0.0684	8.31	2.02
FL01-01 @ 6'	12/3/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

**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. Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

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

TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH-ORO = Total extactable petroleum hydrocarbons - oil range organics

TMB = Trimethylbenzene

Benz(a) = Benzanthracene

Benzo(a) = Benzopyrene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylnaphthalene

SAR = Sodium adsorption ratio

mg/kg = Milligrams per kilogram

= Source material characterization sample

ft. = Feet

bgs = Below ground surface

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

NA = Not analyzed

**TABLE 2**  
**FORMER DUKE J 4-33 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 <sup>(1)</sup>			6-8.3	<4	<6	2
WH01 @ 6'	12/3/2021	6 ft. bgs	8.13	0.976	<b>6.79</b>	0.0578
FLR01 @ 4'	12/3/2021	4 ft. bgs	<b>8.31</b>	0.429	2.02	0.0391
BKG01 @ 4'	12/3/2021	4 ft. bgs	7.56	0.446	0.831	NA
BKG01 @ 6'	12/3/2021	6 ft. bgs	7.95	0.491	0.699	NA
FL01-01 @ 6'	12/3/2021	6 ft. bgs	7.64	1.67	0.893	NA

**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

bgs = Below ground surface

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

NA = Not analyzed

  = Source material characterization sample

TABLE 3  
FORMER DUKE J 4-33 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 <sup>(1,2)</sup>			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL <sup>(1,2,3)</sup>			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'	12/3/2021	6 ft. bgs	<0.00500	0.0118	0.0196	<0.00500	0.0322	0.0144	0.0220	<0.00500	0.0589	<0.00500	<0.00500	0.0911	<0.00500	<0.00500
FLR01 @ 4'	12/3/2021	4 ft. bgs	0.496	1.10	2.70	1.75	2.93	1.20	2.96	0.226	2.12	0.636	0.924	10.7	0.0466	0.0684

**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) = Benzantracene

Benzo(a) = Benzopyrene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylanthalene

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 DUKE J 4-22 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 <sup>(1,2)</sup>			0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL <sup>(1,2,3)</sup>			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FLR01 @ 4'	12/3/2021	4 ft. bgs	2.49	89.6	<0.220	<0.30 <sup>(4)</sup>	5.26	4.29	5.67	0.651	0.0362	30.8
BKG01 @ 4'	12/3/2021	4 ft. bgs	2.70	59.9	<0.213	<0.30 <sup>(4)</sup>	4.27	3.80	5.54	0.670	0.0328	18.8
BKG01 @ 6'	12/3/2021	6 ft. bgs	3.15	161	0.226	<0.30 <sup>(4)</sup>	5.62	5.63	6.33	0.864	0.0426	33.8
FL01-01 @ 6'	12/3/2021	6 ft. bgs	3.07	81.2	<0.217	<0.30 <sup>(4)</sup>	5.76	5.21	6.58	0.715	0.0401	27.0

**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 DUKE J 4-33 WELLHEAD**  
**FIELD DATA SUMMARY TABLE**

Sample ID	Date Sampled	Depth	GPS Data <sup>(1)</sup> Latitude / Longitude		PDOP Value	VOC Concentration <sup>(2)</sup> (ppm)
WH01 @ 6'	12/3/2021	6 ft. bgs	40.425723	-104.792733	1.4	1.4
FLR01 @ 4'	12/3/2021	4 ft. bgs	40.425715	-104.792739	1.2	0.0
WHS01-N @ 0-6"	12/3/2021	0-6 in. bgs	40.425776	-104.792731	1.2	1.0
WHS01-W @ 0-6"	12/3/2021	0-6 in. bgs	40.425726	-104.792813	1.2	2.1
WHS01-S @ 0-6"	12/3/2021	0-6 in. bgs	40.425672	-104.792727	1.2	0.3
WHS01-E @ 0-6"	12/3/2021	0-6 in. bgs	40.425721	-104.792663	1.3	0.0
FL01-01 @ 6'	12/3/2021	6 ft. bgs	40.425695	-104.792339	1.3	0.1
BKG01 @ 4'	12/3/2021	4 ft. bgs	40.425583	-104.792762	1.0	0.8
BKG01 @ 6'	12/3/2021	6 ft. bgs	40.425600	-104.792757	1.2	1.9

**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

January 04, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Duke J 4-33 Wellhead

Work Order #2112067

Enclosed are the results of analyses for samples received by Summit Scientific on 12/03/21 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President





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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2112067-01	Soil	12/03/21 09:30	12/03/21 15:30
FLR01@4'	2112067-02	Soil	12/03/21 09:32	12/03/21 15:30
BKG01@4'	2112067-04	Soil	12/03/21 10:42	12/03/21 15:30
BKG01@6'	2112067-05	Soil	12/03/21 10:50	12/03/21 15:30
FL01-01@6'	2112067-06	Soil	12/03/21 12:15	12/03/21 15:30

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

2112067

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@PDCE.com

City/State/Zip: Broomfield/ CO/ 80020

Phone: 303-487-1228

Project Name: Duke J 4-33 wellhead

Sampler Name: Mataya W.

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	PATs - 915			
1	WHOI @ 10'	12-3-21	930	3			X			X				X	X	X	X	X	X	X	ON HOLD
2	FLRO1 @ 4'		932	3			X			X				X	X	X	X	X	X		
3	BLG01 @ 0-6"		1030	1			X			X										X	
4	BLG01 @ 4'		1042	1			X			X										X	
5	BLG01 @ 6'		1050	1			X			X										X	
6	FL01-01 @ 10'		1215	3			X			X				X	X	X					
7																					
8																					
9																					
10																					

  

Relinquished by: Mataya W.	Date/Time: 12-3-21 3:30pm	Received by: Tasman's Lock Box	Date/Time:	Turn Around Time (Check) Same Day — 72 hours 24 hours — Standard <input checked="" type="checkbox"/> 48 hours —	Notes:
Relinquished by: Tasman's Lock Box	Date/Time:	Received by: 	Date/Time: 12-3-21 1530	Sample Integrity: Temperature Upon Receipt: 11.1	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

S<sub>2</sub>

2112067

## Sample Receipt Checklist

S2 Work Order#

Client: ROC/Tasman Client Project ID: Duke 4-33 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)

11.1

Thermometer ID: G86A9201901378

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ICE
Were all samples received intact <sup>(1)</sup> ?	-			
Was adequate sample volume provided <sup>(1)</sup> ?	-			
If custody seals are present, are they intact <sup>(1)</sup> ?	-			
Are samples with holding times due within 48 hours sample due within 48 hours present?		-		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	-			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	-			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	-			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.			-	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.
  
 Custodian Printed Name or Initials

 12:321  
 Date/Time



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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**WH01@6'**  
**2112067-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEL0140	12/07/21	12/08/21	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: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEL0141	12/07/21	12/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		76.3 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**WH01@6'**  
**2112067-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEL0179	12/09/21	12/13/21	EPA 8270D SIM	
<b>Anthracene</b>	<b>0.0118</b>	0.00500	"	"	"	"	"	"	
<b>Benzo (a) anthracene</b>	<b>0.0196</b>	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Benzo (b) fluoranthene</b>	<b>0.0322</b>	0.00500	"	"	"	"	"	"	
<b>Benzo (k) fluoranthene</b>	<b>0.0144</b>	0.00500	"	"	"	"	"	"	
<b>Chrysene</b>	<b>0.0220</b>	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
<b>Fluoranthene</b>	<b>0.0589</b>	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Pyrene</b>	<b>0.0911</b>	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	65.7 %	40-150			"	"	"	"	
Surrogate: Fluoranthene-d10	56.0 %	40-150			"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0578</b>	0.0100	mg/L	1	BEL0170	12/08/21	12/16/21	EPA 6020B	

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

Date Sampled: **12/03/21 09:30**

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

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**WH01@6'**  
**2112067-01 (Soil)**

**Summit Scientific**

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

Calcium	18.6	0.0545	mg/L dry	1	BEL0191	12/09/21	12/15/21	EPA 6020B
Magnesium	5.05	0.0545	"	"	"	"	"	"
Sodium	128	0.0545	"	"	"	"	"	"

**Calculated Analysis**

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.79	0.00100	units	1	BEL0354	12/15/21	12/15/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.7		%	1	BEL0328	12/15/21	12/15/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.976	0.0100	mmhos/cm	1	BEL0238	12/10/21	12/10/21	EPA 120.1	

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

Date Sampled: **12/03/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.13		pH Units	1	BEL0239	12/10/21	12/10/21	EPA 9045D	

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FLR01@4'**  
**2112067-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEL0140	12/07/21	12/08/21	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: **12/03/21 09:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		109 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	550	50	mg/kg	1	BEL0141	12/07/21	12/08/21	EPA 8015M	
C28-C36 (ORO)	150	50	"	"	"	"	"	"	

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		82.7 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FLR01@4'**  
**2112067-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.496	0.0500	mg/kg	10	BEL0179	12/09/21	12/13/21	EPA 8270D SIM	
Anthracene	1.10	0.0500	"	"	"	"	"	"	
Benzo (a) anthracene	2.70	0.0500	"	"	"	"	"	"	
Benzo (a) pyrene	1.75	0.0500	"	"	"	"	"	"	
Benzo (b) fluoranthene	2.93	0.0500	"	"	"	"	"	"	
Benzo (k) fluoranthene	1.20	0.0500	"	"	"	"	"	"	
Chrysene	2.96	0.0500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	0.226	0.0500	"	"	"	"	"	"	
Fluoranthene	2.12	0.0500	"	"	"	"	"	"	
Fluorene	0.636	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.924	0.0500	"	"	"	"	"	"	
Pyrene	10.7	0.500	"	100	"	"	"	"	
1-Methylnaphthalene	0.0466	0.00500	"	1	"	"	"	"	
2-Methylnaphthalene	0.0684	0.00500	"	"	"	"	"	"	

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		66.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		38.0 %	40-150		"	"	"	"	S-02

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0391	0.0100	mg/L	1	BEL0170	12/08/21	12/16/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.49	0.220	mg/kg dry	1	BEL0666	12/30/21	12/31/21	EPA 6020B	

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FLR01@4'**  
**2112067-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Barium	89.6	0.440	mg/kg dry	1	BEL0666	12/30/21	12/31/21	EPA 6020B
Cadmium	ND	0.220	"	"	"	"	"	"
Copper	5.26	0.440	"	"	"	"	"	"
Lead	4.29	0.220	"	"	"	"	"	"
Nickel	5.67	0.440	"	"	"	"	"	"
Selenium	0.651	0.286	"	"	"	"	"	"
Silver	0.0362	0.0220	"	"	"	"	"	"
Zinc	30.8	0.440	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEL0659	12/30/21	12/30/21	EPA 7196A	

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

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.7	0.0550	mg/L dry	1	BEL0191	12/09/21	12/15/21	EPA 6020B	
Magnesium	6.89	0.0550	"	"	"	"	"	"	
Sodium	44.0	0.0550	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.02	0.00100	units	1	BEL0354	12/15/21	12/15/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.9		%	1	BEL0328	12/15/21	12/15/21	Calculation	

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FLR01@4'**  
**2112067-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	<b>0.429</b>	0.0100		mmhos/cm	1	BEL0238	12/10/21	12/10/21	EPA 120.1	

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

Date Sampled: **12/03/21 09:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>pH</b>	<b>8.31</b>			pH Units	1	BEL0239	12/10/21	12/10/21	EPA 9045D	

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**BKG01@4'**  
**2112067-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.70	0.213	mg/kg dry	1	BEL0666	12/30/21	12/31/21	EPA 6020B	
Barium	59.9	0.427	"	"	"	"	"	"	
Cadmium	ND	0.213	"	"	"	"	"	"	
Copper	4.27	0.427	"	"	"	"	"	"	
Lead	3.80	0.213	"	"	"	"	"	"	
Nickel	5.54	0.427	"	"	"	"	"	"	
Selenium	0.670	0.277	"	"	"	"	"	"	
Silver	0.0328	0.0213	"	"	"	"	"	"	
Zinc	18.8	0.427	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEL0659	12/30/21	12/30/21	EPA 7196A	

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

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	40.3	0.0533	mg/L dry	1	BEL0669	12/30/21	01/04/22	EPA 6020B	
Magnesium	9.29	0.0533	"	"	"	"	"	"	
Sodium	22.5	0.0533	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.831	0.00100	units	1	BFA0045	01/04/22	01/04/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**BKG01@4'**  
**2112067-04 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.7		%	1	BEL0650	12/30/21	12/30/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.446	0.0100	mmhos/cm	1	BFA0006	01/03/22	01/03/22	EPA 120.1	

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

Date Sampled: **12/03/21 10:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.56		pH Units	1	BFA0007	01/03/22	01/03/22	EPA 9045D	

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**BKG01@6'**  
**2112067-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.15	0.206	mg/kg dry	1	BEL0666	12/30/21	12/31/21	EPA 6020B	
Barium	161	0.413	"	"	"	"	"	"	
Cadmium	0.226	0.206	"	"	"	"	"	"	
Copper	5.62	0.413	"	"	"	"	"	"	
Lead	5.63	0.206	"	"	"	"	"	"	
Nickel	6.33	0.413	"	"	"	"	"	"	
Selenium	0.864	0.268	"	"	"	"	"	"	
Silver	0.0426	0.0206	"	"	"	"	"	"	
Zinc	33.8	0.413	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEL0659	12/30/21	12/30/21	EPA 7196A	

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

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	46.4	0.0516	mg/L dry	1	BEL0669	12/30/21	01/04/22	EPA 6020B	
Magnesium	10.3	0.0516	"	"	"	"	"	"	
Sodium	20.2	0.0516	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	0.699	0.00100	units	1	BFA0045	01/04/22	01/04/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**BKG01@6'**  
**2112067-05 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	96.9		%	1	BEL0650	12/30/21	12/30/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.491	0.0100	mmhos/cm	1	BFA0006	01/03/22	01/03/22	EPA 120.1	

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

Date Sampled: **12/03/21 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.95		pH Units	1	BFA0007	01/03/22	01/03/22	EPA 9045D	

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FL01-01@6'**  
**2112067-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEL0140	12/07/21	12/08/21	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: **12/03/21 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		112 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	100	50	mg/kg	1	BEL0141	12/07/21	12/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		91.3 %	30-150		"	"	"	"	

**Total Metals by EPA 6020B**

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FL01-01@6'**  
**2112067-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.07	0.217	mg/kg dry	1	BEL0666	12/30/21	12/31/21	EPA 6020B	
Barium	81.2	0.435	"	"	"	"	"	"	
Cadmium	ND	0.217	"	"	"	"	"	"	
Copper	5.76	0.435	"	"	"	"	"	"	
Lead	5.21	0.217	"	"	"	"	"	"	
Nickel	6.58	0.435	"	"	"	"	"	"	
Selenium	0.715	0.283	"	"	"	"	"	"	
Silver	0.0401	0.0217	"	"	"	"	"	"	
Zinc	27.0	0.435	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEL0659	12/30/21	12/30/21	EPA 7196A	

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

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	150	0.0544	mg/L dry	1	BEL0669	12/30/21	01/04/22	EPA 6020B	
Magnesium	41.2	0.0544	"	"	"	"	"	"	
Sodium	47.9	0.0544	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	0.893	0.00100	units	1	BFA0045	01/04/22	01/04/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**FL01-01@6'**  
**2112067-06 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.0		%	1	BEL0650	12/30/21	12/30/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.67	0.0100	mmhos/cm	1	BFA0006	01/03/22	01/03/22	EPA 120.1	

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

Date Sampled: **12/03/21 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.64		pH Units	1	BFA0007	01/03/22	01/03/22	EPA 9045D	

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

## 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 BEL0140 - EPA 5030 Soil MS

##### Blank (BEL0140-BLK1)

Prepared & Analyzed: 12/07/21

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	0.0445		"	0.0400		111	23-173			
Surrogate: Toluene-d8	0.0429		"	0.0400		107	20-170			
Surrogate: 4-Bromofluorobenzene	0.0427		"	0.0400		107	21-167			

##### LCS (BEL0140-BS1)

Prepared: 12/07/21 Analyzed: 12/08/21

Benzene	0.0674	0.0020	mg/kg	0.0750		89.8	70-130			
Toluene	0.0758	0.0050	"	0.0750		101	70-130			
Ethylbenzene	0.0578	0.0050	"	0.0750		77.1	70-130			
m,p-Xylene	0.117	0.010	"	0.150		78.3	70-130			
o-Xylene	0.0631	0.0050	"	0.0750		84.2	70-130			
1,2,4-Trimethylbenzene	0.0619	0.0050	"	0.0750		82.6	70-130			
1,3,5-Trimethylbenzene	ND	0.0050	"	0.0750			70-130			
Naphthalene	0.0696	0.0038	"	0.0750		92.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0469		"	0.0400		117	23-173			
Surrogate: Toluene-d8	0.0438		"	0.0400		109	20-170			
Surrogate: 4-Bromofluorobenzene	0.0433		"	0.0400		108	21-167			

##### Matrix Spike (BEL0140-MS1)

Source: 2112067-01

Prepared: 12/07/21 Analyzed: 12/08/21

Benzene	0.0677	0.0020	mg/kg	0.0750	ND	90.2	70-130			
Toluene	0.0745	0.0050	"	0.0750	ND	99.3	70-130			
Ethylbenzene	0.0579	0.0050	"	0.0750	ND	77.2	70-130			
m,p-Xylene	0.118	0.010	"	0.150	ND	79.0	70-130			
o-Xylene	0.0632	0.0050	"	0.0750	ND	84.2	70-130			
1,2,4-Trimethylbenzene	0.0628	0.0050	"	0.0750	ND	83.7	70-130			
1,3,5-Trimethylbenzene	0.0639	0.0050	"	0.0750	ND	85.2	70-130			
Naphthalene	0.0741	0.0038	"	0.0750	ND	98.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0470		"	0.0400		117	23-173			
Surrogate: Toluene-d8	0.0434		"	0.0400		108	20-170			
Surrogate: 4-Bromofluorobenzene	0.0435		"	0.0400		109	21-167			

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**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 BEL0140 - EPA 5030 Soil MS**

Matrix Spike Dup (BEL0140-MSD1)	Source: 2112067-01			Prepared: 12/07/21 Analyzed: 12/08/21						
Benzene	0.0646	0.0020	mg/kg	0.0750	ND	86.2	70-130	4.58	30	
Toluene	0.0764	0.0050	"	0.0750	ND	102	70-130	2.58	30	
Ethylbenzene	0.0624	0.0050	"	0.0750	ND	83.2	70-130	7.49	30	
m,p-Xylene	0.127	0.010	"	0.150	ND	84.8	70-130	7.18	30	
o-Xylene	0.0663	0.0050	"	0.0750	ND	88.4	70-130	4.86	30	
1,2,4-Trimethylbenzene	0.0664	0.0050	"	0.0750	ND	88.5	70-130	5.58	30	
1,3,5-Trimethylbenzene	0.0676	0.0050	"	0.0750	ND	90.2	70-130	5.66	30	
Naphthalene	0.0751	0.0038	"	0.0750	ND	100	70-130	1.33	30	
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0438		"	0.0400		110	20-170			
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		102	21-167			

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**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 BEL0141 - EPA 3550A**

**Blank (BEL0141-BLK1)**

Prepared & Analyzed: 12/07/21

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

**LCS (BEL0141-BS1)**

Prepared & Analyzed: 12/07/21

C10-C28 (DRO)	402	50	mg/kg	400	101	70-130
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**Matrix Spike (BEL0141-MS1)**

Source: 2112067-01

Prepared: 12/07/21 Analyzed: 12/08/21

C10-C28 (DRO)	355	50	mg/kg	400	40.5	78.6	70-130
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**Matrix Spike Dup (BEL0141-MSD1)**

Source: 2112067-01

Prepared: 12/07/21 Analyzed: 12/08/21

C10-C28 (DRO)	342	50	mg/kg	400	40.5	75.3	70-130	3.76	20
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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

## PAH by EPA Method 8270D SIM - Quality Control

### Summit Scientific

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

#### Batch BEL0179 - EPA 5030 Soil MS

##### Blank (BEL0179-BLK1)

Prepared: 12/09/21 Analyzed: 12/13/21

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	0.0393		"	0.0333		118	40-150			
Surrogate: Fluoranthene-d10	0.0268		"	0.0333		80.4	40-150			

##### LCS (BEL0179-BS1)

Prepared: 12/09/21 Analyzed: 12/13/21

Acenaphthene	0.0289	0.00500	mg/kg	0.0333	86.8	31-137
Anthracene	0.0283	0.00500	"	0.0333	84.9	30-120
Benzo (a) anthracene	0.0262	0.00500	"	0.0333	78.6	30-120
Benzo (a) pyrene	0.0274	0.00500	"	0.0333	82.3	30-120
Benzo (b) fluoranthene	0.0294	0.00500	"	0.0333	88.2	30-120
Benzo (k) fluoranthene	0.0250	0.00500	"	0.0333	75.0	30-120
Chrysene	0.0287	0.00500	"	0.0333	86.2	30-120
Dibenz (a,h) anthracene	0.0132	0.00500	"	0.0333	39.5	30-120
Fluoranthene	0.0243	0.00500	"	0.0333	72.8	30-120
Fluorene	0.0332	0.00500	"	0.0333	99.6	30-120
Indeno (1,2,3-cd) pyrene	0.0185	0.00500	"	0.0333	55.4	30-120
Pyrene	0.0232	0.00500	"	0.0333	69.6	35-142
1-Methylnaphthalene	0.0287	0.00500	"	0.0333	86.1	35-142
2-Methylnaphthalene	0.0304	0.00500	"	0.0333	91.3	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0273		"	0.0333	81.8	40-150
Surrogate: Fluoranthene-d10	0.0252		"	0.0333	75.7	40-150

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

### PAH by EPA Method 8270D SIM - Quality Control

#### Summit Scientific

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

#### Batch BEL0179 - EPA 5030 Soil MS

Matrix Spike (BEL0179-MS1)		Source: 2112067-01			Prepared: 12/09/21		Analyzed: 12/13/21			
Acenaphthene	0.0224	0.00500	mg/kg	0.0333	ND	67.2	31-137			
Anthracene	0.0248	0.00500	"	0.0333	0.0118	39.1	30-120			
Benzo (a) anthracene	0.0245	0.00500	"	0.0333	0.0196	14.9	30-120			QM-07
Benzo (a) pyrene	0.0248	0.00500	"	0.0333	ND	74.3	30-120			
Benzo (b) fluoranthene	0.0375	0.00500	"	0.0333	0.0322	15.8	30-120			QM-07
Benzo (k) fluoranthene	0.0408	0.00500	"	0.0333	0.0144	79.3	30-120			
Chrysene	0.0277	0.00500	"	0.0333	0.0220	17.1	30-120			QM-07
Dibenz (a,h) anthracene	0.0161	0.00500	"	0.0333	ND	48.2	30-120			
Fluoranthene	0.0322	0.00500	"	0.0333	0.0589	NR	30-120			QM-07
Fluorene	0.0261	0.00500	"	0.0333	ND	78.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0149	0.00500	"	0.0333	ND	44.7	30-120			
Pyrene	0.0589	0.00500	"	0.0333	0.0911	NR	35-142			QM-07
1-Methylnaphthalene	0.0268	0.00500	"	0.0333	ND	80.3	15-130			
2-Methylnaphthalene	0.0270	0.00500	"	0.0333	ND	81.1	15-130			
Surrogate: 2-Methylnaphthalene-d10		0.0251	"	0.0333		75.3	40-150			
Surrogate: Fluoranthene-d10		0.0207	"	0.0333		62.1	40-150			

Matrix Spike Dup (BEL0179-MSD1)		Source: 2112067-01			Prepared: 12/09/21		Analyzed: 12/13/21			
Acenaphthene	0.0186	0.00500	mg/kg	0.0333	ND	55.7	31-137	18.7	30	
Anthracene	0.0201	0.00500	"	0.0333	0.0118	24.8	30-120	21.2	30	QM-07
Benzo (a) anthracene	0.0190	0.00500	"	0.0333	0.0196	NR	30-120	25.2	30	QM-07
Benzo (a) pyrene	0.0202	0.00500	"	0.0333	ND	60.6	30-120	20.2	30	
Benzo (b) fluoranthene	0.0295	0.00500	"	0.0333	0.0322	NR	30-120	24.0	30	QM-07
Benzo (k) fluoranthene	0.0329	0.00500	"	0.0333	0.0144	55.6	30-120	21.5	30	
Chrysene	0.0224	0.00500	"	0.0333	0.0220	1.15	30-120	21.2	30	QM-07
Dibenz (a,h) anthracene	0.0157	0.00500	"	0.0333	ND	47.1	30-120	2.33	30	
Fluoranthene	0.0209	0.00500	"	0.0333	0.0589	NR	30-120	42.7	30	QM-07
Fluorene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	26.3	30	
Indeno (1,2,3-cd) pyrene	0.0104	0.00500	"	0.0333	ND	31.2	30-120	35.6	30	QM-07
Pyrene	0.0444	0.00500	"	0.0333	0.0911	NR	35-142	27.9	30	QM-07
1-Methylnaphthalene	0.0220	0.00500	"	0.0333	ND	65.9	15-130	19.8	50	
2-Methylnaphthalene	0.0224	0.00500	"	0.0333	ND	67.3	15-130	18.6	50	
Surrogate: 2-Methylnaphthalene-d10		0.0201	"	0.0333		60.4	40-150			
Surrogate: Fluoranthene-d10		0.0180	"	0.0333		53.9	40-150			

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

Project: Duke J 4-33 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**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 BEL0170 - EPA 3050B**

**Blank (BEL0170-BLK1)**

Prepared: 12/08/21 Analyzed: 12/16/21

Boron ND 0.0100 mg/L

**LCS (BEL0170-BS1)**

Prepared: 12/08/21 Analyzed: 12/16/21

Boron 5.11 0.0100 mg/L 5.00 102 80-120

**Duplicate (BEL0170-DUP1)**

**Source: 2112046-01**

Prepared: 12/08/21 Analyzed: 12/16/21

Boron 0.247 0.0100 mg/L 0.251 1.82 20

**Matrix Spike (BEL0170-MS1)**

**Source: 2112046-01**

Prepared: 12/08/21 Analyzed: 12/16/21

Boron 4.75 0.0100 mg/L 5.00 0.251 90.0 75-125

**Matrix Spike Dup (BEL0170-MSD1)**

**Source: 2112046-01**

Prepared: 12/08/21 Analyzed: 12/16/21

Boron 5.33 0.0100 mg/L 5.00 0.251 102 75-125 11.4 25

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BEL0666 - EPA 3050B**

**Blank (BEL0666-BLK1)**

Prepared: 12/30/21 Analyzed: 12/31/21

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 (BEL0666-BS1)**

Prepared: 12/30/21 Analyzed: 12/31/21

Arsenic	33.3	0.200	mg/kg wet	40.0	83.2	80-120
Barium	35.8	0.400	"	40.0	89.5	80-120
Cadmium	1.89	0.200	"	2.00	94.4	80-120
Copper	32.1	0.400	"	40.0	80.3	80-120
Lead	17.4	0.200	"	20.0	86.9	80-120
Nickel	34.9	0.400	"	40.0	87.3	80-120
Selenium	3.60	0.260	"	4.00	90.1	80-120
Silver	1.82	0.0200	"	2.00	91.1	80-120
Zinc	35.0	0.400	"	40.0	87.6	80-120

**Duplicate (BEL0666-DUP1)**

Source: 2112067-02

Prepared: 12/30/21 Analyzed: 12/31/21

Arsenic	2.57	0.220	mg/kg dry	2.49	3.37	20
Barium	97.4	0.440	"	89.6	8.32	20
Cadmium	0.122	0.220	"	0.172	33.6	20
Copper	5.73	0.440	"	5.26	8.50	20
Lead	4.61	0.220	"	4.29	7.17	20
Nickel	5.57	0.440	"	5.67	1.77	20
Selenium	0.689	0.286	"	0.651	5.65	20
Silver	0.0343	0.0220	"	0.0362	5.33	20
Zinc	31.5	0.440	"	30.8	2.19	20

QR-01

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BEL0666 - EPA 3050B**

Matrix Spike (BEL0666-MS1)		Source: 2112067-02			Prepared: 12/30/21		Analyzed: 12/31/21			
Arsenic	40.6	0.220	mg/kg dry	44.0	2.49	86.7	75-125			
Barium	148	0.440	"	44.0	89.6	133	75-125			QM-05
Cadmium	2.14	0.220	"	2.20	0.172	89.7	75-125			
Copper	37.3	0.440	"	44.0	5.26	72.9	75-125			QM-05
Lead	21.9	0.220	"	22.0	4.29	79.9	75-125			
Nickel	37.8	0.440	"	44.0	5.67	73.1	75-125			QM-05
Selenium	4.11	0.286	"	4.40	0.651	78.6	75-125			
Silver	1.89	0.0220	"	2.20	0.0362	84.4	75-125			
Zinc	68.5	0.440	"	44.0	30.8	85.8	75-125			

Matrix Spike Dup (BEL0666-MSD1)		Source: 2112067-02			Prepared: 12/30/21		Analyzed: 12/31/21			
Arsenic	41.2	0.220	mg/kg dry	44.0	2.49	87.9	75-125	1.25	25	
Barium	137	0.440	"	44.0	89.6	108	75-125	7.83	25	
Cadmium	2.23	0.220	"	2.20	0.172	93.6	75-125	3.91	25	
Copper	38.4	0.440	"	44.0	5.26	75.4	75-125	2.84	25	
Lead	22.6	0.220	"	22.0	4.29	83.2	75-125	3.23	25	
Nickel	39.4	0.440	"	44.0	5.67	76.6	75-125	3.96	25	
Selenium	4.19	0.286	"	4.40	0.651	80.3	75-125	1.86	25	
Silver	1.90	0.0220	"	2.20	0.0362	84.9	75-125	0.604	25	
Zinc	73.7	0.440	"	44.0	30.8	97.6	75-125	7.33	25	

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BEL0659 - 3060A Mod**

**Blank (BEL0659-BLK1)**

Prepared & Analyzed: 12/30/21

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BEL0659-BS1)**

Prepared & Analyzed: 12/30/21

Chromium, Hexavalent 25.6 0.30 mg/kg wet 25.0 102 80-120

**Duplicate (BEL0659-DUP1)**

**Source: 2112067-02**

Prepared & Analyzed: 12/30/21

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BEL0659-MS1)**

**Source: 2112067-02**

Prepared & Analyzed: 12/30/21

Chromium, Hexavalent 28.8 0.30 mg/kg dry 27.5 ND 105 75-125

**Matrix Spike Dup (BEL0659-MSD1)**

**Source: 2112067-02**

Prepared & Analyzed: 12/30/21

Chromium, Hexavalent 29.0 0.30 mg/kg dry 27.5 ND 106 75-125 0.760 20

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**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 BEL0191 - General Preparation**

**Blank (BEL0191-BLK1)**

Prepared: 12/09/21 Analyzed: 12/15/21

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

**LCS (BEL0191-BS1)**

Prepared: 12/09/21 Analyzed: 12/15/21

Calcium	5.26	0.0500	mg/L wet	5.00	105	70-130
Magnesium	5.19	0.0500	"	5.00	104	70-130
Sodium	4.74	0.0500	"	5.00	94.9	70-130

**Batch BEL0669 - General Preparation**

**Blank (BEL0669-BLK1)**

Prepared: 12/30/21 Analyzed: 01/04/22

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

**LCS (BEL0669-BS1)**

Prepared: 12/30/21 Analyzed: 01/04/22

Calcium	5.67	0.0500	mg/L wet	5.00	113	70-130
Magnesium	5.30	0.0500	"	5.00	106	70-130
Sodium	5.24	0.0500	"	5.00	105	70-130

Summit Scientific

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

Project: Duke J 4-33 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

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

**Summit Scientific**

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

**Batch BEL0328 - General Preparation**

<b>Duplicate (BEL0328-DUP1)</b>		<b>Source: 2112061-01</b>			<b>Prepared &amp; Analyzed: 12/15/21</b>						
% Solids	90.1		%		90.5			0.401		20	

**Batch BEL0650 - General Preparation**

<b>Duplicate (BEL0650-DUP1)</b>		<b>Source: 2112067-04</b>			<b>Prepared &amp; Analyzed: 12/30/21</b>						
% Solids	93.6		%		93.7			0.120		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: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**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 BEL0238 - General Preparation**

**Blank (BEL0238-BLK1)**

Prepared & Analyzed: 12/10/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEL0238-BS1)**

Prepared & Analyzed: 12/10/21

Specific Conductance (EC) 0.147 0.0100 mmhos/cm 0.150 97.9 95-105

**Duplicate (BEL0238-DUP1)**

Source: 2112066-01

Prepared & Analyzed: 12/10/21

Specific Conductance (EC) 0.624 0.0100 mmhos/cm 0.623 0.176 20

**Batch BFA0006 - General Preparation**

**Blank (BFA0006-BLK1)**

Prepared & Analyzed: 01/03/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BFA0006-BS1)**

Prepared & Analyzed: 01/03/22

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 95-105

**Duplicate (BFA0006-DUP1)**

Source: 2112067-04

Prepared & Analyzed: 01/03/22

Specific Conductance (EC) 0.439 0.0100 mmhos/cm 0.446 1.63 20

Summit Scientific

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

Project: Duke J 4-33 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

**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 BEL0239 - General Preparation**

**LCS (BEL0239-BS1)**

Prepared & Analyzed: 12/10/21

pH	9.06		pH Units	9.18		98.7	95-105
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**Duplicate (BEL0239-DUP1)**

**Source: 2112066-01**

Prepared & Analyzed: 12/10/21

pH	7.93		pH Units		7.89		0.506	20
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**Batch BFA0007 - General Preparation**

**LCS (BFA0007-BS1)**

Prepared & Analyzed: 01/03/22

pH	9.02		pH Units	9.18		98.3	95-105
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**Duplicate (BFA0007-DUP1)**

**Source: 2112067-04**

Prepared & Analyzed: 01/03/22

pH	7.60		pH Units		7.56		0.528	20
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Summit Scientific

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

Project: Duke J 4-33 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/04/22 12:23

### Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QR-01	Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
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