

**TABLE 1**  
**FORMER WIEDEMAN 33-21U WELLHEAD**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS**

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH <sup>(4)</sup> (mg/kg)
<b>Residential SSL<sup>(1,2)</sup></b>			<b>1.2</b>	<b>490</b>	<b>5.8</b>	<b>58</b>	<b>30</b>	<b>27</b>	<b>2</b>	<b>500</b>
<b>Protection of Groundwater SSL<sup>(1,2,3)</sup></b>			<b>0.0026</b>	<b>0.69</b>	<b>0.78</b>	<b>9.9</b>	<b>0.0081</b>	<b>0.0087</b>	<b>0.0038</b>	<b>500</b>
WH01 @ 6'	6/9/2023	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FLR01 @ 4'	6/9/2023	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL01-04 @ 4'	6/7/2023	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL01-07 @ 4'	6/7/2023	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50

**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 TPH-GRO, TPH-DRO, and TPH-ORO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

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

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

TMB = Trimethylbenzene

ft. = Feet

bgs = Below ground surface

**TABLE 2**  
**FORMER WIEDEMAN 33-21U WELLHEAD**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC COMPOUNDS**

Sample ID	Date Sampled	Depth	pH (units)	EC (mmhos/cm)	SAR (units)	Boron (mg/L)
<b>Soil Suitability for Reclamation Standard <sup>(1)</sup></b>			<b>6-8.3</b>	<b>&lt;4</b>	<b>&lt;6</b>	<b>2</b>
WH01 @ 6'	6/9/2023	6 ft. bgs	8.30	0.588	1.50	0.165
FLR01 @ 4'	6/9/2023	4 ft. bgs	<b>8.41</b>	0.259	0.0888	0.150
BKG01 @ 4'	6/9/2023	4 ft. bgs	<b>8.39</b>	NA	NA	NA
BKG01 @ 6'	6/9/2023	6 ft. bgs	<b>8.39</b>	NA	NA	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

ft. = Feet

bgs = Below ground surface

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

NA = Constituent not analyzed

**TABLE 3**  
**FORMER WIEDEMAN 33-21U 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'	6/9/2023	6 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FLR01 @ 4'	6/9/2023	4 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

**Notes:**

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
3. SSLs are applicable if a pathway for communication with groundwater is present.

COGCC = Colorado Oil and Gas Conservation Commission

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

PAHs = Polycyclic aromatic hydrocarbons

Benzo(a) = Benzoanthracene

Benzo(a) = Benzopyrene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylnaphthalene

mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

**TABLE 4**  
**FORMER WIEDEMAN 33-21U WELLHEAD**  
**FIELD DATA SUMMARY TABLE**

Sample ID	Date Sampled	Depth	GPS Data <sup>(1)</sup>		PDOP Value	VOC Concentration <sup>(2)</sup> (ppm)
			Latitude	Longitude		
WH01 @ 6'	6/7/2023	6 ft. bgs	NC	NC	NC	0.1
FLR01 @ 4'	6/7/2023	4 ft. bgs	40.383351	-104.895401	0.8	0.0
WHS01-N @ 0-6"	6/9/2023	0-6 in. bgs	40.383380	-104.895422	0.9	0.0
WHS01-W @ 0-6"	6/9/2023	0-6 in. bgs	40.383356	-104.895500	0.9	0.0
WHS01-S @ 0-6"	6/9/2023	0-6 in. bgs	40.383289	-104.895429	0.8	0.0
WHS01-E @ 0-6"	6/9/2023	0-6 in. bgs	40.383344	-104.895378	0.8	0.0
FL01-01 @ 4'	6/7/2023	4 ft. bgs	40.383403	-104.894562	0.8	0.0
FL01-02 @ 4'	6/7/2023	4 ft. bgs	40.383467	-104.893749	0.8	0.2
FL01-03 @ 4'	6/7/2023	4 ft. bgs	40.383521	-104.892982	0.8	0.0
FL01-04 @ 4'	6/7/2023	4 ft. bgs	40.383582	-104.892204	0.8	0.0
FL01-05 @ 4'	6/7/2023	4 ft. bgs	40.383634	-104.891438	0.8	0.2
FL01-06 @ 4'	6/7/2023	4 ft. bgs	40.383676	-104.890672	0.8	0.1
FL01-07 @ 4'	6/7/2023	4 ft. bgs	40.383665	-104.889908	0.8	0.1
BKG01 @ 4'	6/9/2023	4 ft. bgs	40.383466	-104.895448	0.8	0.0
BKG01 @ 6'	6/9/2023	6 ft. bgs	40.383466	-104.895448	0.8	0.0

**Notes:**

1. Global Positioning System (GPS) data is provided in decimal degrees using North American Datum 1983 (NAD 83) 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  
NC = Not collected

## Attachment A

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 28, 2023

Mark Longhurst

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: PDC - Wiedeman 33-21U Wellhead

Work Order #2306196

Enclosed are the results of analyses for samples received by Summit Scientific on 06/09/23 18:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2306196-01	Soil	06/09/23 10:21	06/09/23 18:25
FLR01@4'	2306196-02	Soil	06/09/23 10:24	06/09/23 18:25
BKG01@4'	2306196-03	Soil	06/09/23 10:34	06/09/23 18:25
BKG01@6'	2306196-04	Soil	06/09/23 10:40	06/09/23 18:25

### Case Narrative

Bryce Goldade requested pH be added to BKG01@4' & BKG01@6' on 6/20/2023. This report includes those results.

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.*



4653 Table Mountain Drive  
 Golden, CO 80403  
 303-277-9310

Lab ID	Page   of
2306196	

Client: PDC PDC / Tasman		Send Data To: Project Manager: Mark Longhurst		Send Invoice To: Company: PDC Energy	
Address: 6855 W 119th Ave		E-Mail: mark.longhurst@PDCE.com		Project Name/Location:	
City/State/Zip: Broomfield / CO / 80220				AFE#:	
Phone: 303-487-1228		Project Name: <i>Wiedeman 33-21U Wellhead</i>		PO/Billing Codes:	
Sampler Name: Jordan Hestmark		Project Number:		Contact: Mark Longhurst	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN-8260B	TPH-(G6-C36)	1,2,4,6,1,3,5-TMB	Boron-HWS	PH, EC, SAR	PAHs		Hold	
1	WHOI @ 6'	6/9/23	1021	2			X			X			X	X	X	X	X	X			
2	FLRO1 @ 4'		1024	2									X	X	X	X	X	X			
3	BKGO1 @ 4'		1034	1																X	
4	BKGO1 @ 6'		1040	1																X	
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by: Jordan Hestmark	Date/Time: 6/9/23 1351	Received by: Tasman lockbox	Date/Time: 6/9/23 1351	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lockbox	Date/Time: 6/9/23 1825	Received by: [Signature]	Date/Time: 6/9/23 1825	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 11.4	Corrected Temperature: 6	IR gun #: 1	HNO3 lot #:			



## Sample Receipt Checklist

Client: PDC/ Tasman Client Project ID: Wiedeman 33-21U WellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other  Airbill #: \_\_\_\_\_

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix (Check all that apply) Air  Soil/Solid  Water  Other Temp (°C)  Thermometer # 

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

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

CH

Custodian Printed Name

6/9/23 1825

Date/Time



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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**WH01@6'**  
**2306196-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGF0445	06/12/23	06/12/23	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: **06/09/23 10:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0358	89.6 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0389	97.4 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0394	98.5 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0444	06/12/23	06/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	15.1	121 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**WH01@6'**  
**2306196-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGF0411	06/12/23	06/12/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0169	50.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0134	40.2 %	40-150		"	"	"	"	

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

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.165</b>	0.0100	mg/L	1	BGF0454	06/13/23	06/19/23	EPA 6020B	

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

Date Sampled: **06/09/23 10:21**

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

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**WH01@6'**  
**2306196-01 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	22.4	0.0610	mg/L dry	1	BGF0442	06/12/23	06/18/23	EPA 6020B	
Magnesium	25.7	0.0610	"	"	"	"	"	"	
Sodium	43.8	0.0610	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.50	0.00100	units	1	BGF0672	06/19/23	06/19/23	Calculation	

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

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.0		%	1	BGF0463	06/13/23	06/13/23	Calculation	

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

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.588	0.0100	mmhos/cm	1	BGF0461	06/13/23	06/13/23	EPA 120.1	

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

Date Sampled: **06/09/23 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.30		pH Units	1	BGF0460	06/13/23	06/13/23	EPA 9045D	

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**FLR01@4'**  
**2306196-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGF0445	06/12/23	06/12/23	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: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0384	96.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0391	97.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0400	99.9 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGF0444	06/12/23	06/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	15.1	121 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**FLR01@4'**  
**2306196-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGF0411	06/12/23	06/12/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0203	60.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0180	54.0 %	40-150		"	"	"	"	

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

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.150</b>	0.0100	mg/L	1	BGF0454	06/13/23	06/19/23	EPA 6020B	

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

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**FLR01@4'**  
**2306196-02 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	96.9	0.0626	mg/L dry	1	BGF0442	06/12/23	06/18/23	EPA 6020B	
Magnesium	14.8	0.0626	"	"	"	"	"	"	
Sodium	3.55	0.0626	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0888	0.00100	units	1	BGF0672	06/19/23	06/19/23	Calculation	

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

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	79.9		%	1	BGF0463	06/13/23	06/13/23	Calculation	

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

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.259	0.0100	mmhos/cm	1	BGF0461	06/13/23	06/13/23	EPA 120.1	

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

Date Sampled: **06/09/23 10:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.41		pH Units	1	BGF0460	06/13/23	06/13/23	EPA 9045D	

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 6855 W. 119th Ave.  
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Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
 07/28/23 09:47

**BKG01@4'**  
**2306196-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/09/23 10:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.39</b>		pH Units	1	BGF0803	06/22/23	06/22/23	EPA 9045D	

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 6855 W. 119th Ave.  
 Broomfield CO, 80020

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 07/28/23 09:47

**BKG01@6'**  
**2306196-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/09/23 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.39</b>		pH Units	1	BGF0803	06/22/23	06/22/23	EPA 9045D	

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch BGF0445 - EPA 5030 Soil MS

##### Blank (BGF0445-BLK1)

Prepared & Analyzed: 06/12/23

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0358		"	0.0400		89.6	50-150				
<i>Surrogate: Toluene-d8</i>	0.0398		"	0.0400		99.4	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0399		"	0.0400		99.8	50-150				

##### LCS (BGF0445-BS1)

Prepared & Analyzed: 06/12/23

Benzene	0.0696	0.0020	mg/kg	0.0750		92.8	70-130				
Toluene	0.0800	0.0050	"	0.0750		107	70-130				
Ethylbenzene	0.0911	0.0050	"	0.0750		121	70-130				
m,p-Xylene	0.177	0.010	"	0.150		118	70-130				
o-Xylene	0.0795	0.0050	"	0.0750		106	70-130				
1,2,4-Trimethylbenzene	0.0844	0.0050	"	0.0750		113	70-130				
1,3,5-Trimethylbenzene	0.0880	0.0050	"	0.0750		117	70-130				
Naphthalene	0.0678	0.0038	"	0.0750		90.4	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0351		"	0.0400		87.8	50-150				
<i>Surrogate: Toluene-d8</i>	0.0400		"	0.0400		99.9	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0401		"	0.0400		100	50-150				

##### Matrix Spike (BGF0445-MS1)

Source: 2306184-01

Prepared & Analyzed: 06/12/23

Benzene	0.0666	0.0020	mg/kg	0.0750	ND	88.8	70-130				
Toluene	0.0754	0.0050	"	0.0750	ND	100	70-130				
Ethylbenzene	0.0862	0.0050	"	0.0750	ND	115	70-130				
m,p-Xylene	0.169	0.010	"	0.150	ND	112	70-130				
o-Xylene	0.0770	0.0050	"	0.0750	ND	103	70-130				
1,2,4-Trimethylbenzene	0.0814	0.0050	"	0.0750	ND	109	70-130				
1,3,5-Trimethylbenzene	0.0842	0.0050	"	0.0750	ND	112	70-130				
Naphthalene	0.0742	0.0038	"	0.0750	ND	99.0	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0376		"	0.0400		94.1	50-150				
<i>Surrogate: Toluene-d8</i>	0.0394		"	0.0400		98.5	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0404		"	0.0400		101	50-150				

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**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 BGF0445 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGF0445-MSD1)</b>	<b>Source: 2306184-01</b>			<b>Prepared &amp; Analyzed: 06/12/23</b>						
Benzene	0.0659	0.0020	mg/kg	0.0750	ND	87.9	70-130	1.09	30	
Toluene	0.0736	0.0050	"	0.0750	ND	98.1	70-130	2.42	30	
Ethylbenzene	0.0860	0.0050	"	0.0750	ND	115	70-130	0.279	30	
m,p-Xylene	0.169	0.010	"	0.150	ND	112	70-130	0.0534	30	
o-Xylene	0.0765	0.0050	"	0.0750	ND	102	70-130	0.586	30	
1,2,4-Trimethylbenzene	0.0807	0.0050	"	0.0750	ND	108	70-130	0.851	30	
1,3,5-Trimethylbenzene	0.0832	0.0050	"	0.0750	ND	111	70-130	1.22	30	
Naphthalene	0.0720	0.0038	"	0.0750	ND	96.0	70-130	2.99	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0341</i>		<i>"</i>	<i>0.0400</i>		<i>85.2</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>50-150</i>			

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BGF0444 - EPA 3550A**

**Blank (BGF0444-BLK1)**

Prepared & Analyzed: 06/12/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	15.2		"	12.5	121	30-150					

**LCS (BGF0444-BS1)**

Prepared & Analyzed: 06/12/23

C10-C28 (DRO)	531	50	mg/kg	500	106	70-130					
Surrogate: <i>o</i> -Terphenyl	14.8		"	12.5	119	30-150					

**Matrix Spike (BGF0444-MS1)**

Source: 2306184-01

Prepared & Analyzed: 06/12/23

C10-C28 (DRO)	540	50	mg/kg	500	11.0	106	70-130				
Surrogate: <i>o</i> -Terphenyl	14.2		"	12.5	114	30-150					

**Matrix Spike Dup (BGF0444-MSD1)**

Source: 2306184-01

Prepared & Analyzed: 06/12/23

C10-C28 (DRO)	603	50	mg/kg	500	11.0	118	70-130	11.0	20		
Surrogate: <i>o</i> -Terphenyl	14.7		"	12.5	117	30-150					

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

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

**Summit Scientific**

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

**Batch BGF0411 - EPA 5030 Soil MS**

**Blank (BGF0411-BLK1)**

Prepared & Analyzed: 06/12/23

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	0.0309		"	0.0333		92.7	40-150			
Surrogate: Fluoranthene-d10	0.0289		"	0.0333		86.8	40-150			

**LCS (BGF0411-BS1)**

Prepared & Analyzed: 06/12/23

Acenaphthene	0.0219	0.00500	mg/kg	0.0333		65.7	31-137			
Anthracene	0.0294	0.00500	"	0.0333		88.3	30-120			
Benzo (a) anthracene	0.0282	0.00500	"	0.0333		84.7	30-120			
Benzo (a) pyrene	0.0273	0.00500	"	0.0333		81.9	30-120			
Benzo (b) fluoranthene	0.0292	0.00500	"	0.0333		87.5	30-120			
Benzo (k) fluoranthene	0.0293	0.00500	"	0.0333		88.0	30-120			
Chrysene	0.0280	0.00500	"	0.0333		83.9	30-120			
Dibenz (a,h) anthracene	0.0136	0.00500	"	0.0333		40.8	30-120			
Fluoranthene	0.0297	0.00500	"	0.0333		89.0	30-120			
Fluorene	0.0288	0.00500	"	0.0333		86.5	30-120			
Indeno (1,2,3-cd) pyrene	0.0169	0.00500	"	0.0333		50.6	30-120			
Pyrene	0.0305	0.00500	"	0.0333		91.4	35-142			
1-Methylnaphthalene	0.0305	0.00500	"	0.0333		91.4	35-142			
2-Methylnaphthalene	0.0281	0.00500	"	0.0333		84.4	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0307		"	0.0333		92.1	40-150			
Surrogate: Fluoranthene-d10	0.0322		"	0.0333		96.5	40-150			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

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

**Summit Scientific**

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

**Batch BGF0411 - EPA 5030 Soil MS**

<b>Matrix Spike (BGF0411-MS1)</b>	<b>Source: 2306190-01</b>			<b>Prepared &amp; Analyzed: 06/12/23</b>							
Acenaphthene	0.0134	0.00500	mg/kg	0.0333	ND	40.1	31-137				
Anthracene	0.0134	0.00500	"	0.0333	ND	40.2	30-120				
Benzo (a) anthracene	0.0138	0.00500	"	0.0333	ND	41.5	30-120				
Benzo (a) pyrene	0.0154	0.00500	"	0.0333	ND	46.1	30-120				
Benzo (b) fluoranthene	0.0137	0.00500	"	0.0333	ND	41.1	30-120				
Benzo (k) fluoranthene	0.0140	0.00500	"	0.0333	ND	42.0	30-120				
Chrysene	0.0138	0.00500	"	0.0333	ND	41.5	30-120				
Dibenz (a,h) anthracene	0.0140	0.00500	"	0.0333	ND	41.8	30-120				
Fluoranthene	0.0136	0.00500	"	0.0333	ND	40.8	30-120				
Fluorene	0.0134	0.00500	"	0.0333	ND	40.3	30-120				
Indeno (1,2,3-cd) pyrene	0.0143	0.00500	"	0.0333	ND	43.0	30-120				
Pyrene	0.0166	0.00500	"	0.0333	ND	49.7	35-142				
1-Methylnaphthalene	0.0155	0.00500	"	0.0333	ND	46.5	15-130				
2-Methylnaphthalene	0.0149	0.00500	"	0.0333	ND	44.8	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0140</i>		<i>"</i>	<i>0.0333</i>		<i>41.9</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0139</i>		<i>"</i>	<i>0.0333</i>		<i>41.6</i>	<i>40-150</i>				

<b>Matrix Spike Dup (BGF0411-MSD1)</b>	<b>Source: 2306190-01</b>			<b>Prepared &amp; Analyzed: 06/12/23</b>							
Acenaphthene	0.0147	0.00500	mg/kg	0.0333	ND	44.1	31-137	9.49	30		
Anthracene	0.0140	0.00500	"	0.0333	ND	41.9	30-120	4.14	30		
Benzo (a) anthracene	0.0147	0.00500	"	0.0333	ND	44.0	30-120	5.82	30		
Benzo (a) pyrene	0.0140	0.00500	"	0.0333	ND	41.9	30-120	9.54	30		
Benzo (b) fluoranthene	0.0147	0.00500	"	0.0333	ND	44.0	30-120	6.91	30		
Benzo (k) fluoranthene	0.0144	0.00500	"	0.0333	ND	43.3	30-120	3.09	30		
Chrysene	0.0145	0.00500	"	0.0333	ND	43.5	30-120	4.73	30		
Dibenz (a,h) anthracene	0.0142	0.00500	"	0.0333	ND	42.7	30-120	1.92	30		
Fluoranthene	0.0145	0.00500	"	0.0333	ND	43.5	30-120	6.56	30		
Fluorene	0.0155	0.00500	"	0.0333	ND	46.6	30-120	14.6	30		
Indeno (1,2,3-cd) pyrene	0.0156	0.00500	"	0.0333	ND	46.8	30-120	8.63	30		
Pyrene	0.0179	0.00500	"	0.0333	ND	53.6	35-142	7.65	30		
1-Methylnaphthalene	0.0147	0.00500	"	0.0333	ND	44.2	15-130	5.11	50		
2-Methylnaphthalene	0.0162	0.00500	"	0.0333	ND	48.7	15-130	8.36	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0140</i>		<i>"</i>	<i>0.0333</i>		<i>42.0</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0144</i>		<i>"</i>	<i>0.0333</i>		<i>43.1</i>	<i>40-150</i>				

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

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

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

**Batch BGF0454 - EPA 3050B**

**Blank (BGF0454-BLK1)**

Prepared: 06/13/23 Analyzed: 06/19/23

Boron ND 0.0100 mg/L

**LCS (BGF0454-BS1)**

Prepared: 06/13/23 Analyzed: 06/19/23

Boron 5.24 0.0100 mg/L 5.00 105 80-120

**Duplicate (BGF0454-DUP1)**

Source: 2306196-01

Prepared: 06/13/23 Analyzed: 06/19/23

Boron 0.149 0.0100 mg/L 0.165 10.4 20

**Matrix Spike (BGF0454-MS1)**

Source: 2306196-01

Prepared: 06/13/23 Analyzed: 06/19/23

Boron 4.85 0.0100 mg/L 5.00 0.165 93.6 75-125

**Matrix Spike Dup (BGF0454-MSD1)**

Source: 2306196-01

Prepared: 06/13/23 Analyzed: 06/19/23

Boron 4.76 0.0100 mg/L 5.00 0.165 91.9 75-125 1.76 25

Summit Scientific

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



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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

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

**Summit Scientific**

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

**Batch BGF0442 - General Preparation**

**Blank (BGF0442-BLK1)**

Prepared: 06/12/23 Analyzed: 06/18/23

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

**LCS (BGF0442-BS1)**

Prepared: 06/12/23 Analyzed: 06/18/23

Calcium	4.60	0.0500	mg/L wet	5.00	92.0	70-130				
Magnesium	5.40	0.0500	"	5.00	108	70-130				
Sodium	5.30	0.0500	"	5.00	106	70-130				

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**

07/28/23 09:47

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

**Summit Scientific**

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

**Batch BGF0463 - General Preparation**

**Duplicate (BGF0463-DUP1)**

**Source: 2306176-01**

Prepared & Analyzed: 06/13/23

% Solids	75.8		%		76.7			1.19	20	
----------	------	--	---	--	------	--	--	------	----	--

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

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

**Summit Scientific**

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

**Batch BGF0461 - General Preparation**

**Blank (BGF0461-BLK1)**

Prepared & Analyzed: 06/13/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGF0461-BS1)**

Prepared & Analyzed: 06/13/23

Specific Conductance (EC) 0.153 0.0100 mmhos/cm 0.150 102 95-105

**Duplicate (BGF0461-DUP1)**

Source: 2306157-01

Prepared & Analyzed: 06/13/23

Specific Conductance (EC) 0.824 0.0100 mmhos/cm 0.831 0.894 20

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

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

**Summit Scientific**

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

**Batch BGF0460 - General Preparation**

**LCS (BGF0460-BS1)**

Prepared & Analyzed: 06/13/23

pH	9.15		pH Units	9.18		99.7	95-105		
----	------	--	----------	------	--	------	--------	--	--

**Duplicate (BGF0460-DUP1)**

Source: 2306157-01

Prepared & Analyzed: 06/13/23

pH	7.77		pH Units			7.73		0.516	20
----	------	--	----------	--	--	------	--	-------	----

**Batch BGF0803 - General Preparation**

**LCS (BGF0803-BS1)**

Prepared & Analyzed: 06/22/23

pH	8.99		pH Units	9.18		97.9	95-105		
----	------	--	----------	------	--	------	--------	--	--

**Duplicate (BGF0803-DUP1)**

Source: 2305620-41

Prepared & Analyzed: 06/22/23

pH	8.55		pH Units			8.54		0.117	20
----	------	--	----------	--	--	------	--	-------	----

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
07/28/23 09:47

### Notes and Definitions

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

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 13, 2023

Mark Longhurst

Tasman Geosciences

6855 W. 119th Ave.

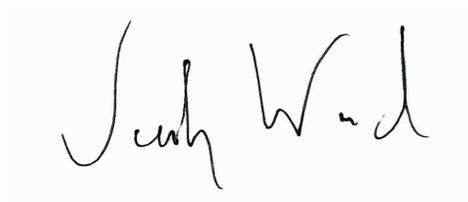
Broomfield, CO 80020

RE: PDC - Wiedeman 33-21U Wellhead

Work Order #2306138

Enclosed are the results of analyses for samples received by Summit Scientific on 06/07/23 18:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Jacob Wood". The signature is written in a cursive style with a large initial "J" and a distinct "W".

Jacob Wood For Paul Shrewsbury

President



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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**

06/13/23 15:10

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-04@4'	2306138-01	Soil	06/07/23 13:39	06/07/23 18:30
FL01-07@4'	2306138-02	Soil	06/07/23 13:20	06/07/23 18:30

Summit Scientific

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4653 Table Mountain Drive  
 Golden, CO 80403  
 303-277-9310

Lab ID	Page 1 of 1
2306138	

Client: PDC PDC / Tasman		Send Data To: Project Manager: Mark Longhurst		Send Invoice To: Company: PDC Energy	
Address: 6855 W 119th Ave		E-Mail: mark.longhurst@PDCE.com		Project Name/Location:	
City/State/Zip: Broomfield / CO / 80220				AFE#:	
Phone: 303-487-1228		Project Name: <u>Wiedeman 33-21A Wellhead</u>		PO/Billing Codes:	
Sampler Name: Jordan Hestmark		Project Number:		Contact: Mark Longhurst	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Air-Canister #	Analysis Requested							Special Instructions	
					HCl	HNO3	None	Other	Water	Soil		Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5 - TMB	Boron - HWS	pH, EC, SAR	PAHs		Metals
1	FLO1-04 @ 4'	6/7/23	1339	2			X			X		X	X	X						
2	FLO1-07 @ 4'	6/7/23	1320	2			X			X		X	X	X						
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: Jordan Hestmark	Date/Time: 6/7/23 1741	Received by: Tasman Lockbox	Date/Time: 6/7/23 1741	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lockbox	Date/Time: 6/7/23 1830	Received by: [Signature]	Date/Time: 6/7/23 1830	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 14.1	Corrected Temperature: 6	IR gun #: 1	HNO3 lot #:			

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2304138

Client: Wiedeman Client Project ID: Wiedeman 33-214 wellhead

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

Matrix (Check all that apply) Air  Soil/Solid  Water  Other

Temp (°C) 14.1 Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON ICE
If custody seals are present, are they intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<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)? <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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> 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):				

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

AS  
Custodian Printed Name

6/7/23  
Date/Time



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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/13/23 15:10

**FL01-04@4'**  
**2306138-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/07/23 13:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGF0352	06/09/23	06/10/23	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: **06/07/23 13:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0399	99.8 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.5 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0406	102 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/07/23 13:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0355	06/09/23	06/09/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/07/23 13:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	14.4	115 %		30-150		"	"	"	"	

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/13/23 15:10

**FL01-07@4'**  
**2306138-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/07/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGF0352	06/09/23	06/10/23	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: **06/07/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0377	94.4 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0382	95.6 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0408	102 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/07/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0355	06/09/23	06/09/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/07/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	14.5	116 %		30-150		"	"	"	"	

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/13/23 15:10

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch BGF0352 - EPA 5030 Soil MS

##### Blank (BGF0352-BLK1)

Prepared & Analyzed: 06/09/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0357		"	0.0400		89.2	50-150			
<i>Surrogate: Toluene-d8</i>	0.0390		"	0.0400		97.4	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0418		"	0.0400		104	50-150			

##### LCS (BGF0352-BS1)

Prepared & Analyzed: 06/09/23

Benzene	0.0696	0.0020	mg/kg	0.0750		92.8	70-130			
Toluene	0.0802	0.0050	"	0.0750		107	70-130			
Ethylbenzene	0.0861	0.0050	"	0.0750		115	70-130			
m,p-Xylene	0.169	0.010	"	0.150		113	70-130			
o-Xylene	0.0767	0.0050	"	0.0750		102	70-130			
1,2,4-Trimethylbenzene	0.0802	0.0050	"	0.0750		107	70-130			
1,3,5-Trimethylbenzene	0.0825	0.0050	"	0.0750		110	70-130			
Naphthalene	0.0695	0.0038	"	0.0750		92.7	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0383		"	0.0400		95.8	50-150			
<i>Surrogate: Toluene-d8</i>	0.0408		"	0.0400		102	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0397		"	0.0400		99.2	50-150			

##### Matrix Spike (BGF0352-MS1)

Source: 2306096-02

Prepared & Analyzed: 06/09/23

Benzene	0.0704	0.0020	mg/kg	0.0750	ND	93.9	70-130			
Toluene	0.0788	0.0050	"	0.0750	ND	105	70-130			
Ethylbenzene	0.0879	0.0050	"	0.0750	ND	117	70-130			
m,p-Xylene	0.173	0.010	"	0.150	ND	115	70-130			
o-Xylene	0.0781	0.0050	"	0.0750	ND	104	70-130			
1,2,4-Trimethylbenzene	0.0821	0.0050	"	0.0750	ND	109	70-130			
1,3,5-Trimethylbenzene	0.0842	0.0050	"	0.0750	ND	112	70-130			
Naphthalene	0.0752	0.0038	"	0.0750	ND	100	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0394		"	0.0400		98.6	50-150			
<i>Surrogate: Toluene-d8</i>	0.0397		"	0.0400		99.3	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0412		"	0.0400		103	50-150			

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/13/23 15:10

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

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

**Batch BGF0352 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGF0352-MSD1)</b>	<b>Source: 2306096-02</b>			<b>Prepared &amp; Analyzed: 06/09/23</b>						
Benzene	0.0688	0.0020	mg/kg	0.0750	ND	91.8	70-130	2.28	30	
Toluene	0.0761	0.0050	"	0.0750	ND	101	70-130	3.49	30	
Ethylbenzene	0.0872	0.0050	"	0.0750	ND	116	70-130	0.891	30	
m,p-Xylene	0.171	0.010	"	0.150	ND	114	70-130	1.43	30	
o-Xylene	0.0769	0.0050	"	0.0750	ND	103	70-130	1.55	30	
1,2,4-Trimethylbenzene	0.0825	0.0050	"	0.0750	ND	110	70-130	0.474	30	
1,3,5-Trimethylbenzene	0.0843	0.0050	"	0.0750	ND	112	70-130	0.107	30	
Naphthalene	0.0774	0.0038	"	0.0750	ND	103	70-130	2.99	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0358</i>		<i>"</i>	<i>0.0400</i>		<i>89.6</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0444</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>50-150</i>			

Summit Scientific

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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/13/23 15:10

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BGF0355 - EPA 3550A**

**Blank (BGF0355-BLK1)**

Prepared & Analyzed: 06/09/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	15.1		"	12.5	121	30-150					

**LCS (BGF0355-BS1)**

Prepared & Analyzed: 06/09/23

C10-C28 (DRO)	517	50	mg/kg	500	103	70-130					
Surrogate: <i>o</i> -Terphenyl	15.1		"	12.5	121	30-150					

**Matrix Spike (BGF0355-MS1)**

Source: 2306096-02

Prepared & Analyzed: 06/09/23

C10-C28 (DRO)	514	50	mg/kg	500	31.5	96.5	70-130				
Surrogate: <i>o</i> -Terphenyl	15.0		"	12.5	120	30-150					

**Matrix Spike Dup (BGF0355-MSD1)**

Source: 2306096-02

Prepared & Analyzed: 06/09/23

C10-C28 (DRO)	532	50	mg/kg	500	31.5	100	70-130	3.41	20		
Surrogate: <i>o</i> -Terphenyl	14.7		"	12.5	118	30-150					

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*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.*



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

Project: PDC - Wiedeman 33-21U Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/13/23 15:10

### Notes and Definitions

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