

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 28, 2024

Karen Olson

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: PDC - Hoffman B33-19 Tank Battery

Work Order #2408221

Enclosed are the results of analyses for samples received by Summit Scientific on 08/20/24 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Natalie Tessier". The signature is fluid and cursive, with the first name being more prominent.

Natalie Tessier For Paul Shrewsbury

President



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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

### ANALYTICAL REPORT FOR SAMPLES


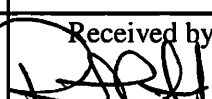
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AST01@0-6"	2408221-01	Soil	08/20/24 09:15	08/20/24 17:40
PWV01-B@6'	2408221-02	Soil	08/20/24 10:10	08/20/24 17:40
SEP01-DL01@3.5'	2408221-06	Soil	08/20/24 09:28	08/20/24 17:40
SEP01-DL02@3.5'	2408221-07	Soil	08/20/24 09:30	08/20/24 17:40
BKG01@0-6"	2408221-10	Soil	08/20/24 14:27	08/20/24 17:40
BKG01@2.5'	2408221-11	Soil	08/20/24 14:29	08/20/24 17:40
BKG01@3.5'	2408221-12	Soil	08/20/24 14:31	08/20/24 17:40
BKG01@6'	2408221-13	Soil	08/20/24 14:33	08/20/24 17:40

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.*

<b>Client:</b> PDC / Tasman		<b>Send Data To:</b>		<b>Send Invoice To:</b>	
<b>Address:</b> 6855 W 119th Ave		<b>Project Manager:</b> Karen Olson		<b>Company:</b> PDC Energy	
<b>City/State/Zip:</b> Broomfield / CO / 80020		<b>E-Mail:</b> karen.olson@chevron.com		<b>Project Name/Location:</b> Hoffman B33-11 Tank Battery	
<b>Phone:</b> 303-487-1228		<b>Project Name:</b> Hoffman B33-11 Tank Battery		<b>AFE#:</b> PX-900 268	
<b>Sampler Name:</b> Ryan Yavinsky / Loren Bohannon		<b>Project Number:</b>		<b>PO/Billing Codes:</b>	
				<b>Contact:</b> Karen Olson Debert Paul	

					Preservative				Matrix			Analysis Requested						Special Instructions		
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	1,2,4 & 1,3,5-TMB	TDS, Cl, SO4	Full 915 suite	HOLD	915-Metals	pH, EC, SAR	BODN
1	ASTD1E0-6"	8/20/24	0915	3			3			X						X				
2	PWVD1-BE6'		1010													X				
3	PWVD1-EE2.5'		1013														X			
4	PWVD1-SE2.5'		1015														X			
5	PWVD1-WE2.5'		1007														X			
6	SEP01-OL01E3.5'		0928													X				
7	SEP01-OL02E3.5'		0930													X				
8	N-PWVD1-EE2.5'		1518														X			
9	N-PWVD1-WE2.5'		1508														X			
10	BK601E0-6"		1427															X	X	X
11	BK601E2.5'		1429																	
12	BK601E3.5'		1431																	
13	BK601E6'		1433																	
14	PWVD1-NE2.5'		1008														X			
15																				

Relinquished by: 	Date/Time: 8/20/24 1730	Received by: Tasman Lockbox	Date/Time: 8/20/24 1730	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lockbox	Date/Time: 8/20/24 1740	Received by: 	Date/Time: 8/20/24 1740	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: 11.1	Corrected Temperature: 0	IR gun #: 1	HNO3 lot #:			

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2408221Client: Perkasman Client Project ID: Hoffman B33-19 Tank BottomShipped 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"/>
--------------------------	-------------------------------------	--------------------------	--------------------------	--------------------------

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> 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"/>	and/or
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

8/20/24  
Date/Time



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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**AST01@0-6"**  
**2408221-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHH0595	08/21/24	08/22/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0386	96.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0382	95.5 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0390	97.4 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHH0598	08/21/24	08/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.0	112 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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**AST01@0-6"**  
**2408221-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHH0628	08/22/24	08/22/24	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: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0156	46.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0188	56.3 %	40-150		"	"	"	"	

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

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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Project Manager: Karen Olson

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**AST01@0-6"**  
**2408221-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Arsenic	2.02	0.200	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B
Barium	30.8	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	5.51	0.400	"	"	"	"	"	"
Lead	4.47	0.200	"	"	"	"	"	"
Nickel	2.62	0.400	"	"	"	"	"	"
Silver	0.0247	0.0200	"	"	"	"	"	"
Zinc	11.6	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	419	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	67.5	0.0500	"	"	"	"	"	"	
Sodium	120	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.43	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

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Project Manager: Karen Olson

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08/28/24 09:17

**AST01@0-6"**  
**2408221-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	95.5			%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	2.74	0.0100		mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 09:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.77			pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

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Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**PWV01-B@6'**  
**2408221-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHH0595	08/21/24	08/22/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0409	102 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0385	96.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0382	95.6 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHH0598	08/21/24	08/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.1	113 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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**PWV01-B@6'**  
**2408221-02 (Soil)**

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**PAH by EPA Method 8270D SIM**

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHH0628	08/22/24	08/22/24	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: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0151	45.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0170	50.9 %	40-150		"	"	"	"	

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

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**PWV01-B@6'**  
**2408221-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Arsenic	1.70	0.200	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B
Barium	26.9	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	2.62	0.400	"	"	"	"	"	"
Lead	3.26	0.200	"	"	"	"	"	"
Nickel	2.00	0.400	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	8.47	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	20.3	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	25.5	0.0500	"	"	"	"	"	"	
Sodium	52.2	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.82	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

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Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**PWV01-B@6'**  
**2408221-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	186		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.626	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.18		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL01@3.5'**  
**2408221-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHH0595	08/21/24	08/22/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0420	105 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0389	97.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0386	96.5 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHH0598	08/21/24	08/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.4	115 %	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 - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL01@3.5'**  
**2408221-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHH0628	08/22/24	08/22/24	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: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0201	60.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0214	64.3 %	40-150		"	"	"	"	

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

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL01@3.5'**  
**2408221-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Arsenic	2.45	0.179	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B
Barium	63.2	0.357	"	"	"	"	"	"
Cadmium	ND	0.179	"	"	"	"	"	"
Copper	5.95	0.357	"	"	"	"	"	"
Lead	7.55	0.179	"	"	"	"	"	"
Nickel	3.95	0.357	"	"	"	"	"	"
Silver	0.0304	0.0179	"	"	"	"	"	"
Zinc	18.8	0.357	"	"	"	"	"	"
Selenium	ND	0.232	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	31.8	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	13.8	0.0500	"	"	"	"	"	"	
Sodium	4.27	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.159	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL01@3.5'**  
**2408221-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.9		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.237	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 09:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.16		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL02@3.5'**  
**2408221-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHH0595	08/21/24	08/22/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0404	101 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0383	95.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0385	96.2 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHH0598	08/21/24	08/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.1	113 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL02@3.5'**  
**2408221-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHH0628	08/22/24	08/22/24	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: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0233	69.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0253	75.8 %	40-150		"	"	"	"	

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

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL02@3.5'**  
**2408221-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Arsenic	2.93	0.200	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B
Barium	68.8	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	3.48	0.400	"	"	"	"	"	"
Lead	4.83	0.200	"	"	"	"	"	"
Nickel	3.92	0.400	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	14.3	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	30.9	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	15.4	0.0500	"	"	"	"	"	"	
Sodium	8.53	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.313	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**SEP01-DL02@3.5'**  
**2408221-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.3		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.289	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.00		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery  
Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@0-6"**  
**2408221-10 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Boron	ND	2.00		mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Arsenic	1.90	0.200		mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B	
Barium	53.6	0.400		"	"	"	"	"	"	
Cadmium	0.224	0.200		"	"	"	"	"	"	
Copper	5.61	0.400		"	"	"	"	"	"	
Lead	7.77	0.200		"	"	"	"	"	"	
Nickel	3.93	0.400		"	"	"	"	"	"	
Silver	0.0391	0.0200		"	"	"	"	"	"	
Zinc	22.0	0.400		"	"	"	"	"	"	
Selenium	ND	0.260		"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Calcium	28.4	0.0500		mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	40.8	0.0500		"	"	"	"	"	"	
Sodium	336	0.0500		"	"	"	"	"	"	

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@0-6"**  
**2408221-10 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	9.46	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.2		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.15	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 14:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.72		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery  
Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@2.5'**  
**2408221-11 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Arsenic	1.21	0.200	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B	
Barium	27.1	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.98	0.400	"	"	"	"	"	"	
Lead	4.95	0.200	"	"	"	"	"	"	
Nickel	2.32	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	12.3	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Calcium	37.4	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	44.4	0.0500	"	"	"	"	"	"	
Sodium	338	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@2.5'**  
**2408221-11 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	8.85	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.8		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.13	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 14:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.99		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

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

Project: PDC - Hoffman B33-19 Tank Battery  
Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@3.5'**  
**2408221-12 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Arsenic	3.33	0.200	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B	
Barium	77.5	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.02	0.400	"	"	"	"	"	"	
Lead	7.58	0.200	"	"	"	"	"	"	
Nickel	4.70	0.400	"	"	"	"	"	"	
Silver	0.0390	0.0200	"	"	"	"	"	"	
Zinc	18.8	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Calcium	15.8	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	110	0.0500	"	"	"	"	"	"	
Sodium	345	0.0500	"	"	"	"	"	"	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@3.5'**  
**2408221-12 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.77	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.0		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.14	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 14:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.00		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

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6855 W. 119th Ave.  
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Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@6'**  
**2408221-13 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0584	08/21/24	08/23/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Arsenic	2.61	0.200	mg/kg dry	1	BHH0589	08/21/24	08/22/24	EPA 6020B	
Barium	60.7	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.26	0.400	"	"	"	"	"	"	
Lead	7.19	0.200	"	"	"	"	"	"	
Nickel	4.11	0.400	"	"	"	"	"	"	
Silver	0.0398	0.0200	"	"	"	"	"	"	
Zinc	18.1	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0574	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Calcium	39.7	0.0500	mg/L dry	1	BHH0604	08/21/24	08/26/24	EPA 6020B	
Magnesium	58.1	0.0500	"	"	"	"	"	"	
Sodium	363	0.0500	"	"	"	"	"	"	

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**BKG01@6'**  
**2408221-13 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	8.59	0.00100	units	1	BHH0815	08/27/24	08/27/24	Calculation	

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

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.2		%	1	BHH0612	08/21/24	08/22/24	Calculation	

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

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.13	0.0100	mmhos/cm	1	BHH0606	08/21/24	08/28/24	EPA 120.1	

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

Date Sampled: **08/20/24 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.92		pH Units	1	BHH0605	08/21/24	08/28/24	EPA 9045D	

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

## 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 BHH0595 - EPA 5030 Soil MS

##### Blank (BHH0595-BLK1)

Prepared & Analyzed: 08/21/24

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	0.0425		"	0.0400		106	50-150			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.7	50-150			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	50-150			

##### LCS (BHH0595-BS1)

Prepared & Analyzed: 08/21/24

Benzene	0.0988	0.0020	mg/kg	0.100		98.8	70-130			
Toluene	0.0991	0.0050	"	0.100		99.1	70-130			
Ethylbenzene	0.0995	0.0050	"	0.100		99.5	70-130			
m,p-Xylene	0.200	0.010	"	0.200		100	70-130			
o-Xylene	0.101	0.0050	"	0.100		101	70-130			
1,2,4-Trimethylbenzene	0.0963	0.0050	"	0.100		96.3	70-130			
1,3,5-Trimethylbenzene	0.0958	0.0050	"	0.100		95.8	70-130			
Naphthalene	0.0966	0.0038	"	0.100		96.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0400		104	50-150			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	50-150			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.4	50-150			

##### Matrix Spike (BHH0595-MS1)

Source: 2408123-08

Prepared: 08/21/24 Analyzed: 08/22/24

Benzene	0.0887	0.0020	mg/kg	0.100	ND	88.7	70-130			
Toluene	0.0882	0.0050	"	0.100	ND	88.2	70-130			
Ethylbenzene	0.0877	0.0050	"	0.100	ND	87.7	70-130			
m,p-Xylene	0.178	0.010	"	0.200	ND	89.0	70-130			
o-Xylene	0.0906	0.0050	"	0.100	ND	90.6	70-130			
1,2,4-Trimethylbenzene	0.0839	0.0050	"	0.100	ND	83.9	70-130			
1,3,5-Trimethylbenzene	0.0855	0.0050	"	0.100	ND	85.5	70-130			
Naphthalene	0.0731	0.0038	"	0.100	ND	73.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0407		"	0.0400		102	50-150			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	50-150			

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**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 BHH0595 - EPA 5030 Soil MS**

Matrix Spike Dup (BHH0595-MSD1)	Source: 2408123-08			Prepared: 08/21/24 Analyzed: 08/22/24						
Benzene	0.0892	0.0020	mg/kg	0.100	ND	89.2	70-130	0.573	30	
Toluene	0.0872	0.0050	"	0.100	ND	87.2	70-130	1.13	30	
Ethylbenzene	0.0886	0.0050	"	0.100	ND	88.6	70-130	1.02	30	
m,p-Xylene	0.180	0.010	"	0.200	ND	89.8	70-130	0.923	30	
o-Xylene	0.0902	0.0050	"	0.100	ND	90.2	70-130	0.498	30	
1,2,4-Trimethylbenzene	0.0811	0.0050	"	0.100	ND	81.1	70-130	3.38	30	
1,3,5-Trimethylbenzene	0.0823	0.0050	"	0.100	ND	82.3	70-130	3.79	30	
Naphthalene	0.0731	0.0038	"	0.100	ND	73.1	70-130	0.0821	30	
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0400		100	50-150			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	50-150			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

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

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

**Batch BHH0598 - EPA 3550A**

**Blank (BHH0598-BLK1)**

Prepared: 08/21/24 Analyzed: 08/22/24

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	14.0		"	12.5		112	30-150			

**LCS (BHH0598-BS1)**

Prepared: 08/21/24 Analyzed: 08/22/24

C10-C28 (DRO)	451	50	mg/kg	500		90.1	70-130			
Surrogate: o-Terphenyl	14.3		"	12.5		115	30-150			

**Matrix Spike (BHH0598-MS1)**

Source: 2408123-08

Prepared: 08/21/24 Analyzed: 08/22/24

C10-C28 (DRO)	468	50	mg/kg	500	29.8	87.6	70-130			
Surrogate: o-Terphenyl	14.5		"	12.5		116	30-150			

**Matrix Spike Dup (BHH0598-MSD1)**

Source: 2408123-08

Prepared: 08/21/24 Analyzed: 08/22/24

C10-C28 (DRO)	463	50	mg/kg	500	29.8	86.6	70-130	1.03	20	
Surrogate: o-Terphenyl	14.3		"	12.5		114	30-150			

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6855 W. 119th Ave.  
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Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

## 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 BHH0628 - EPA 5030 Soil MS

##### Blank (BHH0628-BLK1)

Prepared & Analyzed: 08/22/24

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	0.0212		"	0.0333		63.6	40-150			
Surrogate: Fluoranthene-d10	0.0198		"	0.0333		59.3	40-150			

##### LCS (BHH0628-BS1)

Prepared & Analyzed: 08/22/24

Acenaphthene	0.0222	0.00500	mg/kg	0.0333		66.5	31-137			
Anthracene	0.0204	0.00500	"	0.0333		61.3	30-120			
Benzo (a) anthracene	0.0229	0.00500	"	0.0333		68.6	30-120			
Benzo (a) pyrene	0.0192	0.00500	"	0.0333		57.6	30-120			
Benzo (b) fluoranthene	0.0290	0.00500	"	0.0333		86.9	30-120			
Benzo (k) fluoranthene	0.0199	0.00500	"	0.0333		59.6	30-120			
Chrysene	0.0318	0.00500	"	0.0333		95.3	30-120			
Dibenz (a,h) anthracene	0.0176	0.00500	"	0.0333		52.7	30-120			
Fluoranthene	0.0212	0.00500	"	0.0333		63.7	30-120			
Fluorene	0.0211	0.00500	"	0.0333		63.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0177	0.00500	"	0.0333		53.2	30-120			
Pyrene	0.0254	0.00500	"	0.0333		76.1	35-142			
1-Methylnaphthalene	0.0205	0.00500	"	0.0333		61.5	35-142			
2-Methylnaphthalene	0.0202	0.00500	"	0.0333		60.6	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0205		"	0.0333		61.6	40-150			
Surrogate: Fluoranthene-d10	0.0219		"	0.0333		65.7	40-150			

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

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

### Summit Scientific

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

#### Batch BHH0628 - EPA 5030 Soil MS

##### Matrix Spike (BHH0628-MS1)

Source: 2408221-01

Prepared & Analyzed: 08/22/24

Acenaphthene	0.0205	0.00500	mg/kg	0.0333	ND	61.6	31-137		
Anthracene	0.0179	0.00500	"	0.0333	ND	53.7	30-120		
Benzo (a) anthracene	0.0222	0.00500	"	0.0333	ND	66.6	30-120		
Benzo (a) pyrene	0.0167	0.00500	"	0.0333	ND	50.1	30-120		
Benzo (b) fluoranthene	0.0155	0.00500	"	0.0333	ND	46.6	30-120		
Benzo (k) fluoranthene	0.0145	0.00500	"	0.0333	ND	43.6	30-120		
Chrysene	0.0293	0.00500	"	0.0333	ND	88.0	30-120		
Dibenz (a,h) anthracene	0.0156	0.00500	"	0.0333	ND	46.7	30-120		
Fluoranthene	0.0201	0.00500	"	0.0333	ND	60.2	30-120		
Fluorene	0.0194	0.00500	"	0.0333	ND	58.1	30-120		
Indeno (1,2,3-cd) pyrene	0.0152	0.00500	"	0.0333	ND	45.6	30-120		
Pyrene	0.0206	0.00500	"	0.0333	ND	61.9	35-142		
1-Methylnaphthalene	0.0186	0.00500	"	0.0333	ND	55.7	15-130		
2-Methylnaphthalene	0.0185	0.00500	"	0.0333	ND	55.5	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0189		"	0.0333		56.8	40-150		
Surrogate: Fluoranthene-d10	0.0209		"	0.0333		62.7	40-150		

##### Matrix Spike Dup (BHH0628-MSD1)

Source: 2408221-01

Prepared & Analyzed: 08/22/24

Acenaphthene	0.0188	0.00500	mg/kg	0.0333	ND	56.5	31-137	8.65	30
Anthracene	0.0179	0.00500	"	0.0333	ND	53.8	30-120	0.195	30
Benzo (a) anthracene	0.0227	0.00500	"	0.0333	ND	68.1	30-120	2.27	30
Benzo (a) pyrene	0.0168	0.00500	"	0.0333	ND	50.4	30-120	0.635	30
Benzo (b) fluoranthene	0.0140	0.00500	"	0.0333	ND	41.9	30-120	10.6	30
Benzo (k) fluoranthene	0.0138	0.00500	"	0.0333	ND	41.4	30-120	5.25	30
Chrysene	0.0292	0.00500	"	0.0333	ND	87.7	30-120	0.312	30
Dibenz (a,h) anthracene	0.0155	0.00500	"	0.0333	ND	46.4	30-120	0.616	30
Fluoranthene	0.0189	0.00500	"	0.0333	ND	56.7	30-120	5.92	30
Fluorene	0.0184	0.00500	"	0.0333	ND	55.3	30-120	4.89	30
Indeno (1,2,3-cd) pyrene	0.0149	0.00500	"	0.0333	ND	44.8	30-120	1.75	30
Pyrene	0.0202	0.00500	"	0.0333	ND	60.7	35-142	1.99	30
1-Methylnaphthalene	0.0158	0.00500	"	0.0333	ND	47.5	15-130	15.8	50
2-Methylnaphthalene	0.0156	0.00500	"	0.0333	ND	46.9	15-130	16.9	50
Surrogate: 2-Methylnaphthalene-d10	0.0160		"	0.0333		47.9	40-150		
Surrogate: Fluoranthene-d10	0.0199		"	0.0333		59.6	40-150		

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**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 BHH0584 - EPA 3050B**

**Blank (BHH0584-BLK1)**

Prepared: 08/21/24 Analyzed: 08/23/24

Boron ND 2.00 mg/L

**LCS (BHH0584-BS1)**

Prepared: 08/21/24 Analyzed: 08/23/24

Boron 5.17 2.00 mg/L 5.00 103 80-120

**Duplicate (BHH0584-DUP1)**

Source: 2408218-01

Prepared: 08/21/24 Analyzed: 08/23/24

Boron 0.138 2.00 mg/L 0.143 3.21 20

**Matrix Spike (BHH0584-MS1)**

Source: 2408218-01

Prepared: 08/21/24 Analyzed: 08/23/24

Boron 4.99 2.00 mg/L 4.96 0.143 97.7 75-125

**Matrix Spike Dup (BHH0584-MSD1)**

Source: 2408218-01

Prepared: 08/21/24 Analyzed: 08/23/24

Boron 4.98 2.00 mg/L 4.96 0.143 97.5 75-125 0.161 25

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

### Total Metals by EPA 6020B - Quality Control

#### Summit Scientific

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

#### Batch BHH0589 - EPA 3050B

##### Blank (BHH0589-BLK1)

Prepared: 08/21/24 Analyzed: 08/22/24

Arsenic	ND	0.181	mg/kg wet
Barium	ND	0.362	"
Cadmium	ND	0.181	"
Copper	ND	0.362	"
Lead	ND	0.181	"
Nickel	ND	0.362	"
Silver	ND	0.0181	"
Zinc	ND	0.362	"
Selenium	ND	0.236	"

##### LCS (BHH0589-BS1)

Prepared: 08/21/24 Analyzed: 08/22/24

Arsenic	34.4	0.200	mg/kg wet	36.8	93.6	80-120
Barium	35.4	0.400	"	36.8	96.2	80-120
Cadmium	1.77	0.200	"	1.84	96.4	80-120
Copper	39.4	0.400	"	36.8	107	80-120
Lead	18.1	0.200	"	18.4	98.4	80-120
Nickel	37.1	0.400	"	36.8	101	80-120
Silver	1.78	0.0200	"	1.84	96.7	80-120
Zinc	36.6	0.400	"	36.8	99.5	80-120
Selenium	4.09	0.260	"	3.68	111	80-120

##### Duplicate (BHH0589-DUP1)

Source: 2408221-01

Prepared: 08/21/24 Analyzed: 08/22/24

Arsenic	1.97	0.200	mg/kg dry	2.02	2.71	20
Barium	35.1	0.400	"	30.8	12.9	20
Cadmium	0.152	0.200	"	0.145	4.45	20
Copper	6.05	0.400	"	5.51	9.31	20
Lead	5.01	0.200	"	4.47	11.5	20
Nickel	2.73	0.400	"	2.62	4.19	20
Silver	0.0275	0.0200	"	0.0247	10.6	20
Zinc	12.2	0.400	"	11.6	5.11	20
Selenium	ND	0.260	"	ND		20

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**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 BHH0589 - EPA 3050B**

Matrix Spike (BHH0589-MS1)		Source: 2408221-01			Prepared: 08/21/24 Analyzed: 08/22/24					
Arsenic	39.1	0.200	mg/kg dry	39.4	2.02	94.2	75-125			
Barium	70.1	0.400	"	39.4	30.8	99.9	75-125			
Cadmium	2.06	0.200	"	1.97	0.145	97.5	75-125			
Copper	36.8	0.400	"	39.4	5.51	79.4	75-125			
Lead	24.9	0.200	"	19.7	4.47	104	75-125			
Nickel	29.9	0.400	"	39.4	2.62	69.4	75-125			QM-07
Silver	1.88	0.0200	"	1.97	0.0247	94.4	75-125			
Zinc	39.5	0.400	"	39.4	11.6	71.0	75-125			QM-07
Selenium	4.42	0.260	"	3.94	ND	112	75-125			

Matrix Spike Dup (BHH0589-MSD1)		Source: 2408221-01			Prepared: 08/21/24 Analyzed: 08/22/24					
Arsenic	38.5	0.200	mg/kg dry	38.5	2.02	94.8	75-125	1.58	25	
Barium	73.2	0.400	"	38.5	30.8	110	75-125	4.34	25	
Cadmium	2.01	0.200	"	1.92	0.145	97.0	75-125	2.56	25	
Copper	32.7	0.400	"	38.5	5.51	70.6	75-125	11.8	25	QM-07
Lead	23.4	0.200	"	19.2	4.47	98.6	75-125	5.88	25	
Nickel	28.8	0.400	"	38.5	2.62	68.1	75-125	3.73	25	QM-07
Silver	1.84	0.0200	"	1.92	0.0247	94.4	75-125	2.17	25	
Zinc	38.8	0.400	"	38.5	11.6	70.7	75-125	1.88	25	QM-07
Selenium	4.20	0.260	"	3.85	ND	109	75-125	5.24	25	

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**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 BHH0574 - 3060A Mod**

**Blank (BHH0574-BLK1)**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BHH0574-BS1)**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 25.2 0.30 mg/kg wet 25.0 101 80-120

**Duplicate (BHH0574-DUP1)**

**Source: 2408211-01**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BHH0574-MS1)**

**Source: 2408211-01**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 25.6 0.30 mg/kg dry 28.6 ND 89.4 75-125

**Matrix Spike Dup (BHH0574-MSD1)**

**Source: 2408211-01**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 25.3 0.30 mg/kg dry 28.6 ND 88.6 75-125 0.899 20

Summit Scientific

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6855 W. 119th Ave.  
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Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

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

**Summit Scientific**

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

**Batch BHH0604 - General Preparation**

**Blank (BHH0604-BLK1)**

Prepared: 08/21/24 Analyzed: 08/26/24

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

**LCS (BHH0604-BS1)**

Prepared: 08/21/24 Analyzed: 08/26/24

Calcium	4.95	0.0500	mg/L wet	5.00	99.1	70-130
Magnesium	5.53	0.0500	"	5.00	111	70-130
Sodium	5.33	0.0500	"	5.00	107	70-130

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

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

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

**Batch BHH0612 - General Preparation**

Duplicate (BHH0612-DUP1)		Source: 2408211-01		Prepared: 08/21/24 Analyzed: 08/22/24	
% Solids	86.8		%	87.4	0.740 20

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

**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 BHH0606 - General Preparation**

**Blank (BHH0606-BLK1)**

Prepared: 08/21/24 Analyzed: 08/28/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHH0606-BS1)**

Prepared: 08/21/24 Analyzed: 08/28/24

Specific Conductance (EC) 0.156 0.0100 mmhos/cm 0.150 104 95-105

**Duplicate (BHH0606-DUP1)**

**Source: 2408220-01**

Prepared: 08/21/24 Analyzed: 08/28/24

Specific Conductance (EC) 0.344 0.0100 mmhos/cm 0.347 0.956 20

Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

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

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

**Batch BHH0605 - General Preparation**

**LCS (BHH0605-BS1)**

Prepared: 08/21/24 Analyzed: 08/28/24

pH	9.05	pH Units	9.18	98.6	95-105
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**Duplicate (BHH0605-DUP1)**

Source: 2408220-01

Prepared: 08/21/24 Analyzed: 08/28/24

pH	8.55	pH Units	8.57	0.234	20
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Summit Scientific

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

Project: PDC - Hoffman B33-19 Tank Battery

Project Number: [none]  
Project Manager: Karen Olson

**Reported:**  
08/28/24 09:17

### Notes and Definitions

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.
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