

FREMONT ENVIRONMENTAL INC.

April 6, 2023

Mr. Daniel Peterson
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80634

Subject: **Flowline Closure Data Submittal**
Kammerzell 16-6
API # 05-123-13706
SESE Sec. 6, T4N, R66W
Weld County, Colorado
Fremont Project No. C023-100
Facility # 245911, Remediation #27309

Dear Mr. Peterson:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted Flowline Closure activities for the Noble Energy Inc. (Noble) Kammerzell 16-6. Impacted soil was not encountered during abandonment activities. Details of the Kammerzell 16-6 flowline closure activities are documented in the attached Closure Report. Groundwater was not encountered during flowline abandonment activities.

Please contact me at (303) 956-8714 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

FREMONT ENVIRONMENTAL INC.



Paul V. Henchan, P.E.
Senior Consultant

Attachments:

Facility Closure Checklist
Tables
Figures
Photos
Laboratory Reports

**1759 REDWING LANE, BROOMFIELD, CO 80020
(303) 956-8714 (DIRECT)**

Flowline Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional Attachments:		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: Kammerzell-64N66W 6SESE Facility: 326809		Date: 04/06/2023						Remediation Project #: 27309
Associated Wells: Kammerzell 16-6 Facility ID: 245911 API: 05-123-13706		Age of Site: 1988						Number of Photos Attached: 4 Photos
Starting point: (GPS coordinates and descriptions) 40.336395, -104.814473								
End point: (GPS coordinates and descriptions) 40.337222, -104.813809								
USCS Soil Type: SW and SC					Estimated Depth to Groundwater: N/A			
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)								
None observed								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)								
None observed								
Flowlines								
Flowline type	2" Steel							
Depth	Roughly 3ft							
Age	1988							
Length	395ft							
Construction Material	BLK Tape / 2" Steel							
Were flowlines pulled?	Yes							
Visual Integrity of lines	No Damage							
Visual impacts if trenched	N/A							
PID Readings if trenched	High @ 0.5ppm							
Sample taken? Location/Sample ID#	FL01 @3.5' FL05 @5.0'							
Photo Number(s)	Photo 1A-1D							
Other observations regarding on location flowlines:								
Summary								
Was impacted soil identified? No Yes - less than 10 cubic yards Yes - more than 10 cubic yards								
Total number of samples field screened: 3 samples					Total number of samples collected: 5 samples			
Highest PID Reading: High @ 0.5ppm (FL01 @3.5')					Total number of samples submitted to lab for analysis: 2 Samples			
If more than 10 cubic yards of impacted soil were observed:								
Vertical extent: N/A					Estimated spill volume: N/A			
Lateral extent: N/A					Volume of soil removed: N/A			
Is additional investigation required? N/A								
Was groundwater encountered during the investigation? No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater: N/A					Was remedial groundwater removal conducted? Yes No			
Date Groundwater was encountered: N/A					Commencement date of removal: N/A			
Sheen on groundwater? Yes No					Volume of groundwater removed prior to sampling: N/A			
Free product observed? Yes No					Volume of groundwater removed post sampling: N/A			
Total number of samples collected: N/A					Total Volume of groundwater removed: N/A			
Total number of samples submitted to lab for analysis: N/A								

TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
KAMMERZELL 16-6, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C023-100

Sample ID	Sample Date	Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4- Trimethyl- Benzene (mg/kg)	1,3,5- Trimethyl- Benzene (mg/kg)	Naphthalene (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500		
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500		
FL01@3.5'	4/6/2023	3.5 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
FL05@5.0'	4/6/2023	5.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Summation of GRO+DRO+ORO must be less than 500 mg/kg

TABLE 2
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
KAMMERZELL 16-6, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C023-100

Sample ID	Sample Date	Depth (ft)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) Anthracene (mg/kg)	Benzo (a) Pyrene (mg/kg)	Benzo (b) Fluoranthene (mg/kg)	Benzo (k) Fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) Anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3- cd) Pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - Naphthalene (mg/kg)	2-Methyl- Naphthalene (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			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
FL01@3.5'	4/6/2023	3.5 Ft	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00658	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FL05@5.0'	4/6/2023	5.0 Ft	<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

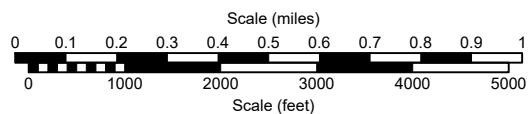
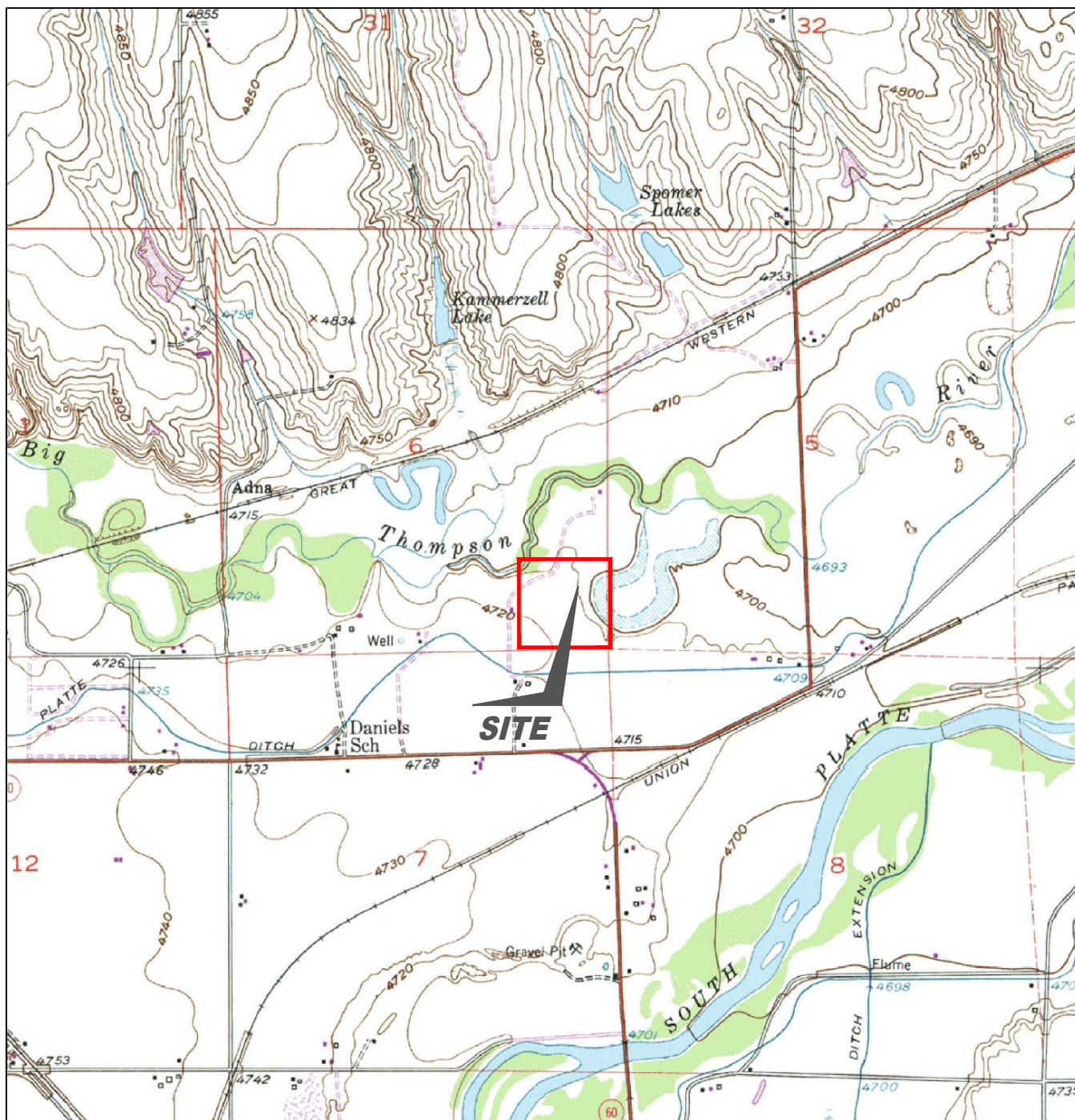
Bold faced values exceed the COGCC Table 915-1 concentrations
Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

TABLE 3
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE ENERGY INC.
KAMMERZELL 16-6, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C023-100

Sample ID	Sample Date	Depth (ft)	pH	EC (mmhos/cm)	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
FL01@3.5'	4/6/2023	3.5 Ft	7.75	0.388	0.635	0.343
FL05@5.0'	4/6/2023	5.0 Ft	7.71	0.410	0.372	0.302

Bold faced values exceed the COGCC Table 915-1 concentrations

Yellow highlighted 915-1 Limits indicate the referenced soil screening level (SSL)



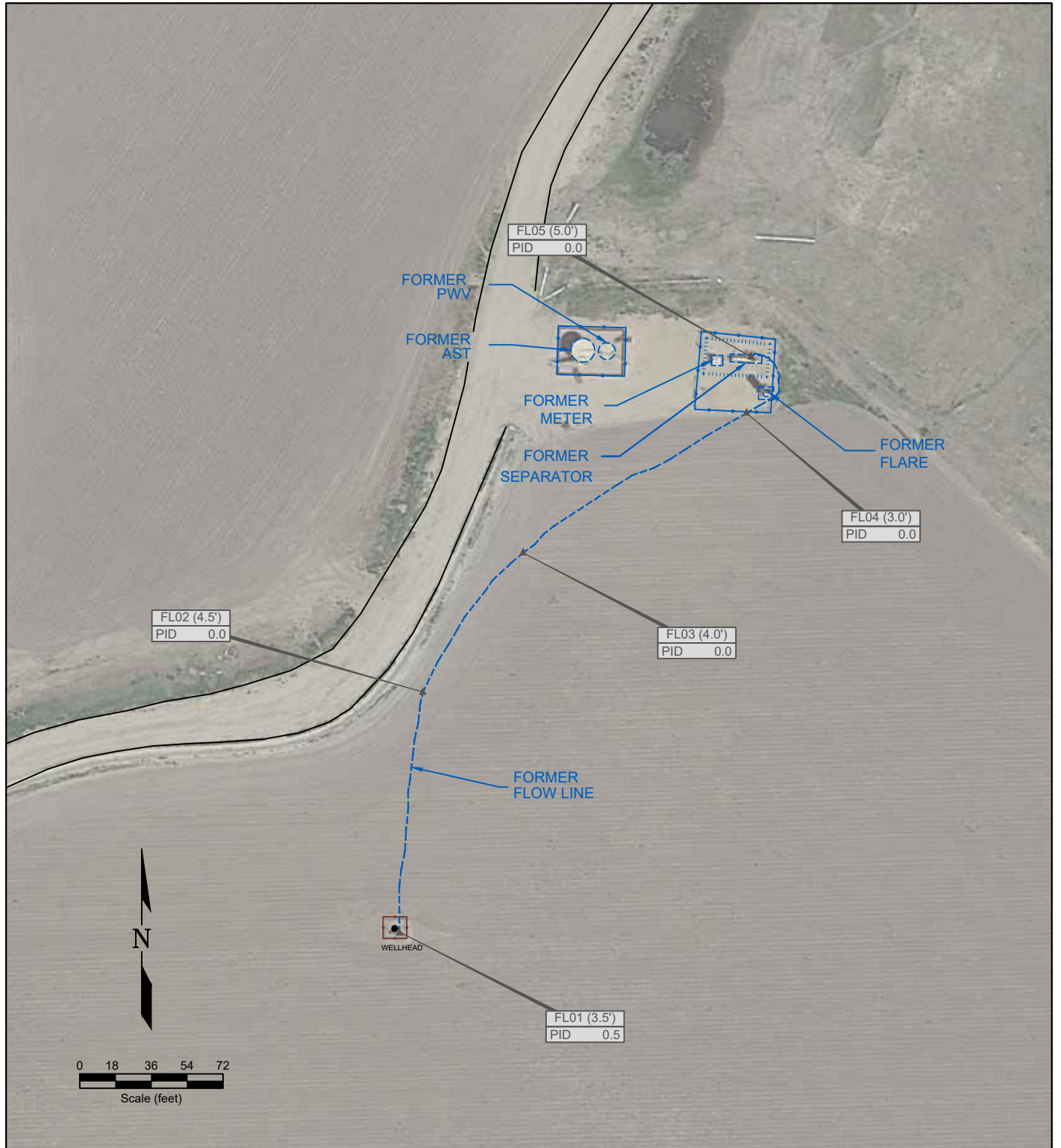
USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

NOBLE ENERGY INC - KAMMERZELL 16-6
SESE Sec. 6, T4N, R66W, 6th PM
Weld County, Colorado
40.336396°, -104.814479°

Project # CO23-100	API # 05-123-13706	Facility # 245911
Date 10/16/2023	Remediation # 27309	Filename 23100T





LEGEND

- WELLHEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- FLOW LINE
- CONTAINMENT BERM
- FENCE LINE

FL01 PID READING LOCATION IDENTIFICATION
PID 0.1 PHOTO IONIZATION DETECTION (ppm)

Figure 2
SITE MAP

NOBLE ENERGY INC - KAMMERZELL 16-6

SESE Sec. 6, T4N, R66W, 6th PM

Weld County, Colorado

40.336396°, -104.814479°

Project #
CO23-100

API #
05-123-13706

Facility #
245911

Date
10/16/2023

Remediation #
27309

Filename
23100Q



Photo Log



Description:

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Photo Log



Description:

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Photo Log



Description:

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Photo Log



Description:

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Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 17, 2023

Paul Henchan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Kammerzell 16-6

Work Order #2304115

Enclosed are the results of analyses for samples received by Summit Scientific on 04/06/23 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Sheely".

Scott Sheely For Paul Shrewsbury
President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01@3.5'	2304115-01	Soil	04/06/23 00:00	04/06/23 16:30
FL05@5'	2304115-02	Soil	04/06/23 00:00	04/06/23 16:30

Summit Scientific

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

SUMMIT SCIENTIFIC

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

Lab ID

Page 1 of 1

2304115

		Send Data To:		Send Invoice To:	
Client: <u>Fremont Env</u>		Project Manager: <u>Paul Henahan</u>		Company: <u>Noble</u>	
Address:		E-Mail: <u>Paulh@fremontenv.com</u>		Project Name/Location:	
City/State/Zip:		<u>jesfg@fremontenv.com Ethunb@fremontenv.com</u>		AFE#:	
Phone:		Project Name: <u>Kammerzell 16-6</u>		PO/Billing Codes:	
Sampler Name: <u>JG</u>		Project Number:		Contact:	

					Preservative				Matrix				Analysis Requested						Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	BTEX+N	TMBs (915)	DR0, OR0, GRO	PAHs (915)	EC, pH, SAR, Baran	Metals (915)		
1	FL01@3.5'	04/06/23		2			X			X			X	X	X	X	X			
2	FL05@5.0'	04/06/23		2			X			X			X	X	X	X	X			
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: <u>[Signature]</u>	Date/Time: <u>04/06/23</u>	Received by: <u>[Signature]</u>	Date/Time: <u>4/6/23</u>	TAT Business Days	Field DO	Notes: Bill to Noble
				Same Day	Field EC	
Relinquished by: <u>SZ</u>	Date/Time: <u>4/6/23</u>	Received by: <u>[Signature]</u>	Date/Time: <u>4/6/23</u>	1 Day	Field ORP	
	<u>1630</u>		<u>1630</u>	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: <u>9.5</u>	Corrected Temperature: <u>[Signature]</u>	IR gun #: <u>1</u>	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2304115Client: FremontClient Project ID: Kammerzell 100-6Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐Airbill #: ☐

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply)

Air ☐Soil/Solid ☒Water ☐Other ☐

Temp (°C)

9.5

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ICE</u>
If custody seals are present, are they intact? ⁽¹⁾	<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 ²⁺), Hexavalent Chromium (Cr ⁶⁺ , 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? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				


 Custodian Printed Name

4/6/23
 Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

FL01@3.5'
2304115-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGD0221	04/07/23	04/08/23	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: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0401	100 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0349	87.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0375	93.8 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGD0223	04/07/23	04/08/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.9	103 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

FL01@3.5'
2304115-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGD0268	04/10/23	04/10/23	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	0.00658	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: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0161	48.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0229	68.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.343	0.0100	mg/L	1	BGD0267	04/10/23	04/16/23	EPA 6020B	

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

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

FL01@3.5'
2304115-01 (Soil)

Summit Scientific

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

Calcium	37.1	0.0610	mg/L dry	1	BGD0295	04/10/23	04/16/23	EPA 6020B
Magnesium	14.4	0.0610	"	"	"	"	"	"
Sodium	18.0	0.0610	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.635	0.00100	units	1	BGD0491	04/16/23	04/16/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	81.9		%	1	BGD0272	04/10/23	04/10/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.388	0.0100	mmhos/cm	1	BGD0333	04/11/23	04/11/23	EPA 120.1	

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

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.75		pH Units	1	BGD0332	04/11/23	04/11/23	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

FL05@5'
2304115-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGD0221	04/07/23	04/08/23	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: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0393	98.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0359	89.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0377	94.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGD0223	04/07/23	04/08/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.4	99.0 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

FL05@5'
2304115-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGD0268	04/10/23	04/10/23	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: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0245	73.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0392	117 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.302	0.0100	mg/L	1	BGD0267	04/10/23	04/16/23	EPA 6020B	

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

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

FL05@5'
2304115-02 (Soil)

Summit Scientific

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

Calcium	43.9	0.0529	mg/L dry	1	BGD0295	04/10/23	04/16/23	EPA 6020B
Magnesium	11.5	0.0529	"	"	"	"	"	"
Sodium	10.7	0.0529	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.372	0.00100	units	1	BGD0491	04/16/23	04/16/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.5		%	1	BGD0272	04/10/23	04/10/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.410	0.0100	mmhos/cm	1	BGD0333	04/11/23	04/11/23	EPA 120.1	

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

Date Sampled: **04/06/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.71		pH Units	1	BGD0332	04/11/23	04/11/23	EPA 9045D	

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch BGD0221 - EPA 5030 Soil MS

Blank (BGD0221-BLK1)

Prepared: 04/07/23 Analyzed: 04/08/23

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0363		"	0.0400		90.7	50-150			
Surrogate: Toluene-d8	0.0349		"	0.0400		87.3	50-150			
Surrogate: 4-Bromofluorobenzene	0.0366		"	0.0400		91.6	50-150			

LCS (BGD0221-BS1)

Prepared: 04/07/23 Analyzed: 04/08/23

Benzene	0.110	0.0020	mg/kg	0.125		87.9	70-130			
Toluene	0.106	0.0050	"	0.125		84.6	70-130			
Ethylbenzene	0.150	0.0050	"	0.125		120	70-130			
m,p-Xylene	0.301	0.010	"	0.250		121	70-130			
o-Xylene	0.139	0.0050	"	0.125		112	70-130			
1,2,4-Trimethylbenzene	0.158	0.0050	"	0.125		127	70-130			
1,3,5-Trimethylbenzene	0.154	0.0050	"	0.125		123	70-130			
Naphthalene	0.146	0.0038	"	0.125		116	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0387		"	0.0400		96.8	50-150			
Surrogate: Toluene-d8	0.0356		"	0.0400		89.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0352		"	0.0400		88.0	50-150			

Matrix Spike (BGD0221-MS1)

Source: 2304114-01

Prepared: 04/07/23 Analyzed: 04/08/23

Benzene	0.109	0.0020	mg/kg	0.125	ND	87.2	70-130			
Toluene	0.134	0.0050	"	0.125	ND	108	70-130			
Ethylbenzene	0.148	0.0050	"	0.125	ND	118	70-130			
m,p-Xylene	0.296	0.010	"	0.250	ND	118	70-130			
o-Xylene	0.137	0.0050	"	0.125	ND	110	70-130			
1,2,4-Trimethylbenzene	0.153	0.0050	"	0.125	ND	122	70-130			
1,3,5-Trimethylbenzene	0.150	0.0050	"	0.125	ND	120	70-130			
Naphthalene	0.150	0.0038	"	0.125	ND	120	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0389		"	0.0400		97.4	50-150			
Surrogate: Toluene-d8	0.0352		"	0.0400		88.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0346		"	0.0400		86.6	50-150			

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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 BGD0221 - EPA 5030 Soil MS

Matrix Spike Dup (BGD0221-MSD1)	Source: 2304114-01			Prepared: 04/07/23 Analyzed: 04/08/23						
Benzene	0.109	0.0020	mg/kg	0.125	ND	87.2	70-130	0.0275	30	
Toluene	0.136	0.0050	"	0.125	ND	109	70-130	1.33	30	
Ethylbenzene	0.153	0.0050	"	0.125	ND	123	70-130	3.48	30	
m,p-Xylene	0.307	0.010	"	0.250	ND	123	70-130	3.66	30	
o-Xylene	0.141	0.0050	"	0.125	ND	113	70-130	2.71	30	
1,2,4-Trimethylbenzene	0.156	0.0050	"	0.125	ND	125	70-130	2.14	30	
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130	3.61	30	
Naphthalene	0.154	0.0038	"	0.125	ND	123	70-130	2.23	30	
Surrogate: 1,2-Dichloroethane-d4	0.0392		"	0.0400		98.0	50-150			
Surrogate: Toluene-d8	0.0354		"	0.0400		88.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0352		"	0.0400		88.0	50-150			

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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 BGD0223 - EPA 3550A

Blank (BGD0223-BLK1)

Prepared: 04/07/23 Analyzed: 04/08/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	12.2		"	12.5		97.8	30-150			

LCS (BGD0223-BS1)

Prepared: 04/07/23 Analyzed: 04/08/23

C10-C28 (DRO)	537	50	mg/kg	500		107	70-130			
Surrogate: o-Terphenyl	13.7		"	12.5		110	30-150			

Matrix Spike (BGD0223-MS1)

Source: 2304114-01

Prepared: 04/07/23 Analyzed: 04/08/23

C10-C28 (DRO)	510	50	mg/kg	500	89.2	84.1	70-130			
Surrogate: o-Terphenyl	13.3		"	12.5		107	30-150			

Matrix Spike Dup (BGD0223-MSD1)

Source: 2304114-01

Prepared: 04/07/23 Analyzed: 04/08/23

C10-C28 (DRO)	534	50	mg/kg	500	89.2	88.9	70-130	4.60	20	
Surrogate: o-Terphenyl	11.9		"	12.5		95.0	30-150			

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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 BGD0268 - EPA 5030 Soil MS

Blank (BGD0268-BLK1)

Prepared & Analyzed: 04/10/23

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	0.0294		"	0.0333		88.2	40-150			
Surrogate: Fluoranthene-d10	0.0370		"	0.0333		111	40-150			

LCS (BGD0268-BS1)

Prepared & Analyzed: 04/10/23

Acenaphthene	0.0322	0.00500	mg/kg	0.0333		96.7	31-137			
Anthracene	0.0293	0.00500	"	0.0333		88.0	30-120			
Benzo (a) anthracene	0.0379	0.00500	"	0.0333		114	30-120			
Benzo (a) pyrene	0.0352	0.00500	"	0.0333		106	30-120			
Benzo (b) fluoranthene	0.0381	0.00500	"	0.0333		114	30-120			
Benzo (k) fluoranthene	0.0276	0.00500	"	0.0333		82.8	30-120			
Chrysene	0.0261	0.00500	"	0.0333		78.4	30-120			
Dibenz (a,h) anthracene	0.0344	0.00500	"	0.0333		103	30-120			
Fluoranthene	0.0290	0.00500	"	0.0333		87.0	30-120			
Fluorene	0.0309	0.00500	"	0.0333		92.8	30-120			
Indeno (1,2,3-cd) pyrene	0.0372	0.00500	"	0.0333		111	30-120			
Pyrene	0.0377	0.00500	"	0.0333		113	35-142			
1-Methylnaphthalene	0.0309	0.00500	"	0.0333		92.7	35-142			
2-Methylnaphthalene	0.0316	0.00500	"	0.0333		94.8	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0336		"	0.0333		101	40-150			
Surrogate: Fluoranthene-d10	0.0314		"	0.0333		94.2	40-150			

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Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BGD0268 - EPA 5030 Soil MS

Matrix Spike (BGD0268-MS1)

Source: 2304113-02

Prepared & Analyzed: 04/10/23

Acenaphthene	0.0149	0.00500	mg/kg	0.0333	ND	44.6	31-137		
Anthracene	0.0146	0.00500	"	0.0333	ND	43.7	30-120		
Benzo (a) anthracene	0.0177	0.00500	"	0.0333	ND	53.0	30-120		
Benzo (a) pyrene	0.0158	0.00500	"	0.0333	ND	47.3	30-120		
Benzo (b) fluoranthene	0.0142	0.00500	"	0.0333	ND	42.5	30-120		
Benzo (k) fluoranthene	0.0152	0.00500	"	0.0333	ND	45.6	30-120		
Chrysene	0.0149	0.00500	"	0.0333	0.000525	43.3	30-120		
Dibenz (a,h) anthracene	0.0144	0.00500	"	0.0333	ND	43.3	30-120		
Fluoranthene	0.0166	0.00500	"	0.0333	ND	49.7	30-120		
Fluorene	0.0156	0.00500	"	0.0333	ND	46.7	30-120		
Indeno (1,2,3-cd) pyrene	0.0142	0.00500	"	0.0333	ND	42.5	30-120		
Pyrene	0.0152	0.00500	"	0.0333	ND	45.6	35-142		
1-Methylnaphthalene	0.0151	0.00500	"	0.0333	ND	45.4	15-130		
2-Methylnaphthalene	0.0140	0.00500	"	0.0333	ND	42.0	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0138		"	0.0333		41.3	40-150		
Surrogate: Fluoranthene-d10	0.0184		"	0.0333		55.2	40-150		

Matrix Spike Dup (BGD0268-MSD1)

Source: 2304113-02

Prepared & Analyzed: 04/10/23

Acenaphthene	0.0201	0.00500	mg/kg	0.0333	ND	60.4	31-137	30.0	30
Anthracene	0.0184	0.00500	"	0.0333	ND	55.1	30-120	23.2	30
Benzo (a) anthracene	0.0182	0.00500	"	0.0333	ND	54.5	30-120	2.95	30
Benzo (a) pyrene	0.0160	0.00500	"	0.0333	ND	48.1	30-120	1.53	30
Benzo (b) fluoranthene	0.0134	0.00500	"	0.0333	ND	40.3	30-120	5.29	30
Benzo (k) fluoranthene	0.0149	0.00500	"	0.0333	ND	44.6	30-120	2.19	30
Chrysene	0.0157	0.00500	"	0.0333	0.000525	45.4	30-120	4.64	30
Dibenz (a,h) anthracene	0.0145	0.00500	"	0.0333	ND	43.4	30-120	0.235	30
Fluoranthene	0.0232	0.00500	"	0.0333	ND	69.7	30-120	33.6	30
Fluorene	0.0197	0.00500	"	0.0333	ND	59.0	30-120	23.3	30
Indeno (1,2,3-cd) pyrene	0.0150	0.00500	"	0.0333	ND	45.0	30-120	5.68	30
Pyrene	0.0153	0.00500	"	0.0333	ND	46.0	35-142	0.786	30
1-Methylnaphthalene	0.0198	0.00500	"	0.0333	ND	59.3	15-130	26.5	50
2-Methylnaphthalene	0.0218	0.00500	"	0.0333	ND	65.4	15-130	43.7	50
Surrogate: 2-Methylnaphthalene-d10	0.0207		"	0.0333		62.1	40-150		
Surrogate: Fluoranthene-d10	0.0263		"	0.0333		78.8	40-150		

QR-02

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PO Box 1289
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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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 BGD0267 - EPA 3050B

Blank (BGD0267-BLK1)

Prepared: 04/10/23 Analyzed: 04/16/23

Boron ND 0.0100 mg/L

LCS (BGD0267-BS1)

Prepared: 04/10/23 Analyzed: 04/16/23

Boron 5.97 0.0100 mg/L 5.00 119 80-120

Duplicate (BGD0267-DUP1)

Source: 2304083-01

Prepared: 04/10/23 Analyzed: 04/16/23

Boron 0.193 0.0100 mg/L 0.184 4.71 20

Matrix Spike (BGD0267-MS1)

Source: 2304083-01

Prepared: 04/10/23 Analyzed: 04/16/23

Boron 5.61 0.0100 mg/L 5.00 0.184 109 75-125

Matrix Spike Dup (BGD0267-MSD1)

Source: 2304083-01

Prepared: 04/10/23 Analyzed: 04/16/23

Boron 5.89 0.0100 mg/L 5.00 0.184 114 75-125 4.79 25

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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 BGD0295 - General Preparation

Blank (BGD0295-BLK1)

Prepared: 04/10/23 Analyzed: 04/16/23

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

LCS (BGD0295-BS1)

Prepared: 04/10/23 Analyzed: 04/16/23

Calcium	4.95	0.0500	mg/L wet	5.00	99.0	70-130
Magnesium	5.19	0.0500	"	5.00	104	70-130
Sodium	5.27	0.0500	"	5.00	105	70-130

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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

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

Batch BGD0272 - General Preparation

Duplicate (BGD0272-DUP1)		Source: 2304108-04			Prepared & Analyzed: 04/10/23					
% Solids	93.5		%		92.9		0.627		20	

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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 BGD0333 - General Preparation

Blank (BGD0333-BLK1)

Prepared & Analyzed: 04/11/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGD0333-BS1)

Prepared & Analyzed: 04/11/23

Specific Conductance (EC) 0.150 0.0100 mmhos/cm 0.150 100 95-105

Duplicate (BGD0333-DUP1)

Source: 2303772-01

Prepared & Analyzed: 04/11/23

Specific Conductance (EC) 0.316 0.0100 mmhos/cm 0.317 0.505 20

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

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

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

Batch BGD0332 - General Preparation

LCS (BGD0332-BS1)

Prepared & Analyzed: 04/11/23

pH	9.08	pH Units	9.18	98.9	95-105
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Duplicate (BGD0332-DUP1)

Source: 2303772-01

Prepared & Analyzed: 04/11/23

pH	8.10	pH Units	8.06	0.495	20
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Summit Scientific

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Project: Noble - Kammerzell 16-6

Project Number: [none]
Project Manager: Paul Henchan

Reported:
04/17/23 15:58

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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