

Tank Battery Closure Checklist

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

Additional attachments (optional):		Pit Closure		Wellhead Closure		Flowline Closure		Partially Buried Vault Closure
Site Name & ECMC Facility Number: 310041		Date: 1/24/2024			Remediation Project #: 31352			
Associated Wells: 1		Age of Site:			Number of Photos Attached: 17			
Location: (GPS coordinates of southeaster berm) 40.257490, -104.605980						Estimated Facility Size (acres):		

General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)
 A little bit of snow and some odor coming from excavation of PWV

USCS Soil Type: SM	Estimated Depth to Groundwater: NA
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Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
 3'

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
 NA

Tanks

Tank Contents	AST01	AST02					
Size (barrels)							
Age							
Construction							
Tank type	AST	AST					
Visual Integrity	Good	Good					
Condition of tank	Good	Good					
PID Readings	0.0	0.1					
Soil impacts present at valves or hatches?							
PID Readings							
Sample taken? Location/ Sample ID#	1	1					
Photo Number(s)	1	1					

Other observations regarding tanks:

Separators

Separator size	SEP01	SEP02					
Vertical or							
Age							
Soil impacts	no	no					
PID Readings	0.0	0.1					
Sample taken? Location/ Sample ID#	2	2					
Photo Number(s)	2	2					

Other observations regarding separators:
 Flowline and Dumpline

Third Party Equipment

Type	PWV	Meter house	Flares						
Age									
Third Party									
Removal Date	1/24/23	1/23/24	1/24/24						
Sample taken?									
PID Readings	0.0-233.3	0.7	0.1						
Photo Number(s)	6	2	1						

Other Facility Equipment

Equipment type									
Equipment									
Age									
Soil impacts									
PID Readings									
Sample taken?									
Photo Number(s)									

Other observations regarding other facility or third party equipment:

Summary

Was impacted soil identified?

Yes - less than 10 cubic yards

Total number of samples field screened: 3

Total number of samples collected: 17

Highest PID Reading: 233.3

Total number of samples submitted to lab for analysis: 14

If more than 10 cubic yards of impacted soil were observed:

Vertical extent:

Estimated spill volume:

Lateral extent:

Volume of soil removed:

Is additional investigation required?

Was groundwater encountered during the investigation?

No

Measured depth to groundwater:

Was remedial groundwater removal conducted?

Date Groundwater was encountered:

Commencement date of removal:

Sheen on groundwater?

Volume of groundwater removed prior to sampling:

Free product observed?



Volume of groundwater removed post sampling:

Total number of samples collected:

Total Volume of groundwater removed:

Total number of samples submitted to lab for analysis:

Photographic Log

					
Material:	Volume:	Contents:	Material:	Volume:	Contents:
Notes/Conditions:			Notes/Conditions:		

Photographic Log





Equipment ID: SS03@2'		Equipment Type:		Equipment ID: SS04@2'		Equipment Type:	
Material:	Volume:	Contents:		Material:	Volume:	Contents:	
Notes/Conditions:				Notes/Conditions:			



Photographic Log


Equipment ID: SS05@2'		Equipment Type:		Equipment ID: SS06@2'		Equipment Type:	
Material:	Volume:	Contents:		Material:	Volume:	Contents:	
Notes/Conditions:				Notes/Conditions:			

Photographic Log

					
Material:	Volume:	Contents:	Material:	Volume:	Contents:
Notes/Conditions:			Notes/Conditions:		


Photographic Log

					
Material:	Volume:	Contents:	Material:	Volume:	Contents:
Notes/Conditions:			Notes/Conditions:		



Photographic Log


Equipment ID: FLARE01@0-6"		Equipment Type:		Equipment ID: SEP01-FL@2'		Equipment Type:	
Material:	Volume:	Contents:		Material:	Volume:	Contents:	
Notes/Conditions:				Notes/Conditions:			

Photographic Log

					
Equipment ID: SEP02-FL@2'		Equipment Type:	Equipment ID: SEP02-DL@2'		Equipment Type:
Material:	Volume:	Contents:	Material:	Volume:	Contents:
Notes/Conditions:			Notes/Conditions:		

Photographic Log

								
						Equipment ID: SEP01-DL@2' Equipment Type:		
Material:		Volume:	Contents:		Equipment ID: WH01@0-6" Equipment Type:			
Material:		Volume:	Contents:		Material:		Volume:	Contents:
Notes/Conditions:				Notes/Conditions:				

Photographic Log


					
Equipment ID: WH02@0-6"		Equipment Type:	Equipment ID:		Equipment Type:
Material:	Volume:	Contents:	Material:	Volume:	Contents:
Notes/Conditions:			Notes/Conditions:		

TABLE 1
SOIL SAMPLE LOCATIONS
NOBLE ENERGY, INC. - HOUNDSKEEPER H01-17

Soil Sample ID	Date	PID (ppm)	Visual	Olfactory	Sample Type (Grab/Lab)	Latitude ¹	Longitude	PDOP
AST01@0-6"	01/24/24	0.0	No Staining	No Odor	Lab	40.261256	-104.611395	1.0
AST02@0-6"	01/24/24	0.1	No Staining	No Odor	Lab	40.261219	-104.611398	1.0
Flare01@0-6"	01/24/24	0.0	No Staining	No Odor	Grab	40.261256	-104.610982	0.7
FS01@3'	01/24/24	102.2	Organic Content	Organic Odor	Lab	40.261239	-104.611359	0.9
FS02@3'	01/24/24	1.6	No Staining	No Odor	Lab	40.261219	-104.611360	1.0
MH01@0-6"	01/24/24	5.8	No Staining	No Odor	Grab	40.261273	-104.611139	0.7
MH02@0-6"	01/24/24	0.7	No Staining	No Odor	Grab	40.261293	-104.611134	1.1
SEP01-DL@2'	01/24/24	0.1	No Staining	No Odor	Lab	40.261265	-104.611075	0.9
SEP01-FL@2'	01/24/24	0.0	No Staining	No Odor	Lab	40.261279	-104.611031	0.7
SEP02-DL@2'	01/24/24	0.1	No Staining	No Odor	Lab	40.261239	-104.611079	0.8
SEP02-FL@2'	01/24/24	0.1	No Staining	No Odor	Lab	40.261247	-104.611037	0.8
SS01@2'	01/24/24	0.2	No Staining	No Odor	Lab	40.261257	-104.611348	0.9
SS02@2'	01/24/24	233.3	HC Staining	HC Odor	Lab	40.261242	-104.611334	0.9
SS03@2'	01/24/24	113.4	HC Staining	HC Odor	Lab	40.261215	-104.611332	0.9
SS04@2'	01/24/24	2.8	HC Staining	No Odor	Lab	40.261172	-104.611371	0.9
SS05@2'	01/24/24	110.1	HC Staining	HC Odor	Lab	40.261192	-104.611374	0.8
SS06@2'	01/24/24	0.1	No Staining	No Odor	Lab	40.261220	-104.611366	1.1

Notes:

PID = Photoionization detector

ppm = parts per million

PDOP = Position dilution of precision

HC = Hydrocarbon

1.) Latitude and longitude coordinates will be provided in decimal degrees with an accuracy and precision of 5 decimals of a degree using the North American Datum ("NAD") of 1983

TABLE 2
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - HOUNDSKEEPER H01-17

Soil Sample ID	Date	¹ Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1,2,4 - TMB (mg/kg)	1,3,5 - TMB (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ^{1,2}		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^{1,2,3}		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
AST01@0-6"	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<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
AST02@0-6"	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	0.0378	0.0322	0.052	0.0224	0.0303	<0.00500	0.0228	<0.00500	0.0300	0.0225	<0.00500	<0.00500
FS01@3'	01/24/24	0.013	<0.0050	0.0098	<0.010	<0.0050	<0.0050	<0.0038	3.4	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0219	0.0479	
FS02@3'	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	0.0113	<0.00500	<0.00500	<0.00500	0.00705	<0.00500	0.00706	0.00892	<0.00500	<0.00500
SEP01-DL@2'	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<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
SEP01-FL@2'	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	0.0115	0.00919	0.0201	0.00722	0.0108	<0.00500	0.0180	<0.00500	0.0115	0.0164	<0.00500	<0.00500
SEP02-DL@2'	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<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
SEP02-FL@2'	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00514	<0.00500	0.00786	<0.00500	<0.00500	
SS01@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS02@2'	01/24/24	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	0.025	25	240	50	<0.00500	<0.00500	0.00598	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.282	0.553	
SS03@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS04@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS05@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS06@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
SSR ^{1,2}		6 - 8.3	<6	<4mmhos/cm	2
AST01@0-6"	01/24/24	8.14	0.239	0.231	<2.00
AST02@0-6"	01/24/24	5.64	0.0558	2.74	<2.00
FS01@3'	01/24/24	7.25	0.461	0.520	<2.00
FS02@3'	01/24/24	7.82	0.339	0.277	<2.00
SEP01-DL@2'	01/24/24	7.93	2.37	0.976	<2.00
SEP01-FL@2'	01/24/24	8.30	0.0194	0.253	<2.00
SEP02-DL@2'	01/24/24	7.96	0.0776	0.357	<2.00
SEP02-FL@2'	01/24/24	7.99	0.093	0.313	<2.00
SS01@2'	01/24/24	RP	RP	RP	RP
SS02@2'	01/24/24	7.49	0.928	0.431	<2.00
SS03@2'	01/24/24	RP	RP	RP	RP
SS04@2'	01/24/24	RP	RP	RP	RP
SS05@2'	01/24/24	RP	RP	RP	RP
SS06@2'	01/24/24	RP	RP	RP	RP

Soil Sample ID	Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL ^{1,2}		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL ^{1,2,3}		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
AST01@0-6"	01/24/24	3.52	104	<0.200	<0.30	5.39	7.18	6.43	<0.260	0.038	21.5
AST02@0-6"	01/24/24	1.67	50.3	0.200	<0.30	5.00	8.01	3.62	<0.260	0.0228	18.8
FS01@3'	01/24/24	2.30	84.5	0.237	<0.30	6.10	8.01	5.13	<0.260	0.0326	20.5
FS02@3'	01/24/24	2.06	74.8	0.230	<0.30	5.28	7.45	4.65	<0.260	0.0270	20.2
SEP01-DL@2'	01/24/24	2.47	88.8	<0.200	<0.30	4.81	7.06	5.09	<0.260	0.0239	19.3
SEP01-FL@2'	01/24/24	1.78	47.1	<0.200	<0.30	4.05	5.21	3.75	<0.260	<0.0200	14.8
SEP02-DL@2'	01/24/24	2.35	73.0	<0.200	<0.30	4.26	5.02	4.36	<0.260	<0.0200	19.2
SS01@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SEP02-FL@2'	01/24/24	2.78	64.0	0.219	<0.30	5.00	6.00	4.41	<0.260	0.0233	17.0
SS02@2'	01/24/24	2.05	88.0	0.202	<0.30	5.28	7.18	4.96	<0.260	0.0418	21.0
SS03@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS04@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS05@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP
SS06@2'	01/24/24	RP	RP	RP	RP	RP	RP	RP	RP	RP	RP

Notes:

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

Definitions:

ECMC = Energy and Carbon Management Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

SAR = Sodium Adsorption Ratio

EC = Electrical Conductivity

mmhos/cm = Millimhos per centimeter

mg/L = Milligrams per liter

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

Highlighted results are equal to or exceed the ECMC Table 915-1 standard

1,2,4 - TMB = 1,2,4 Trimethylbenzene

1,3,5 - TMB = 1,3,5 Trimethylbenzene

Benz(a) = Benzo(a)anthracene

Benzo(b) = Benzo(b)fluoranthene

Benzo(k) = Benzo(k)fluoranthene

Benzo(a) = Benzo(a)pyrene

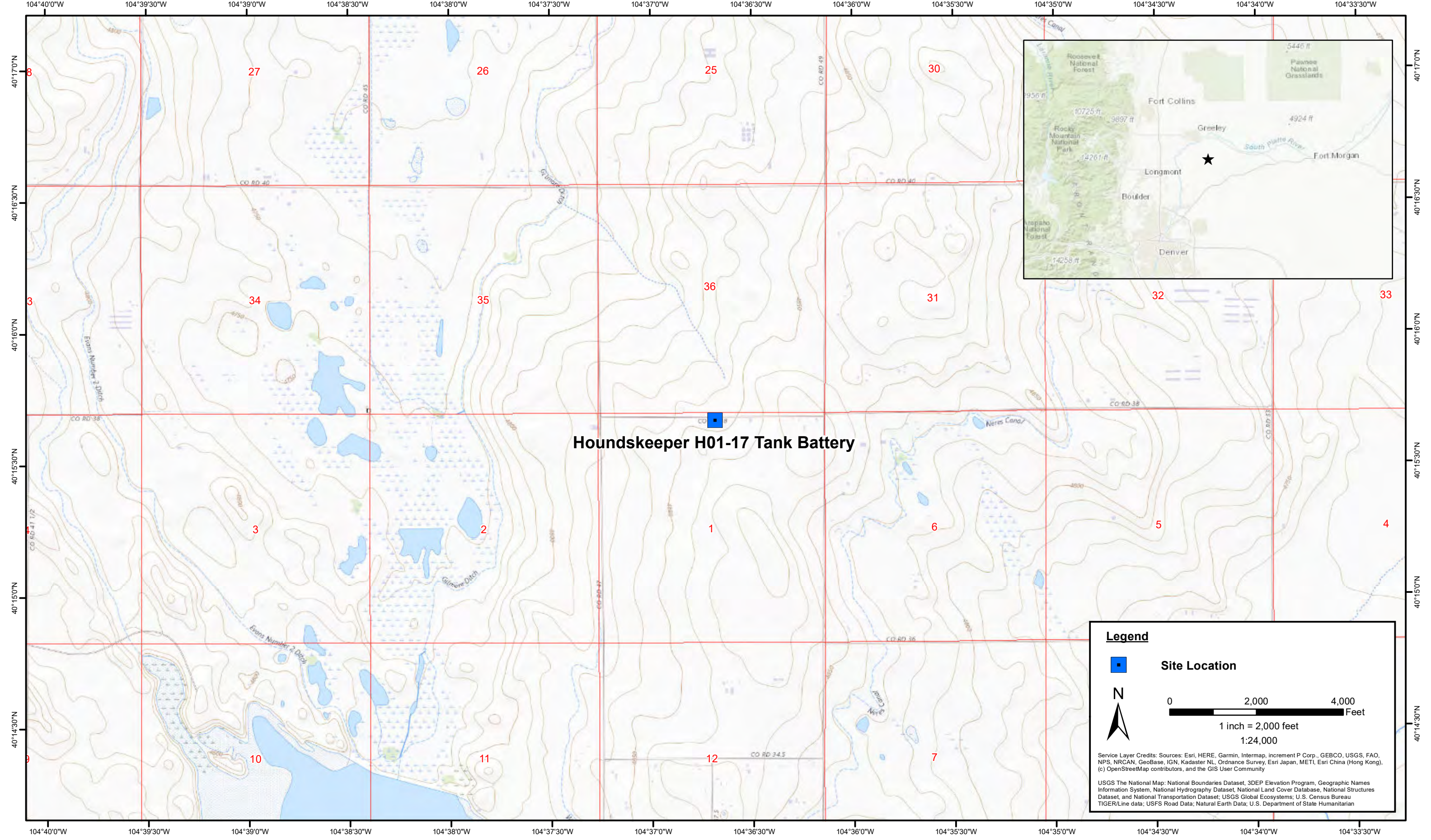
A,H = Dibenzo(a,h)anthracene

1,2,3-CD = Indeno(1,2,3-cd)pyrene

1-M = 1-methylnaphthalene

2-M = 2-methylnaphthalene

RP = Results Pending



DATE:	January 2024
DESIGNED BY:	J. Whritenour
DRAWN BY:	L. Reed

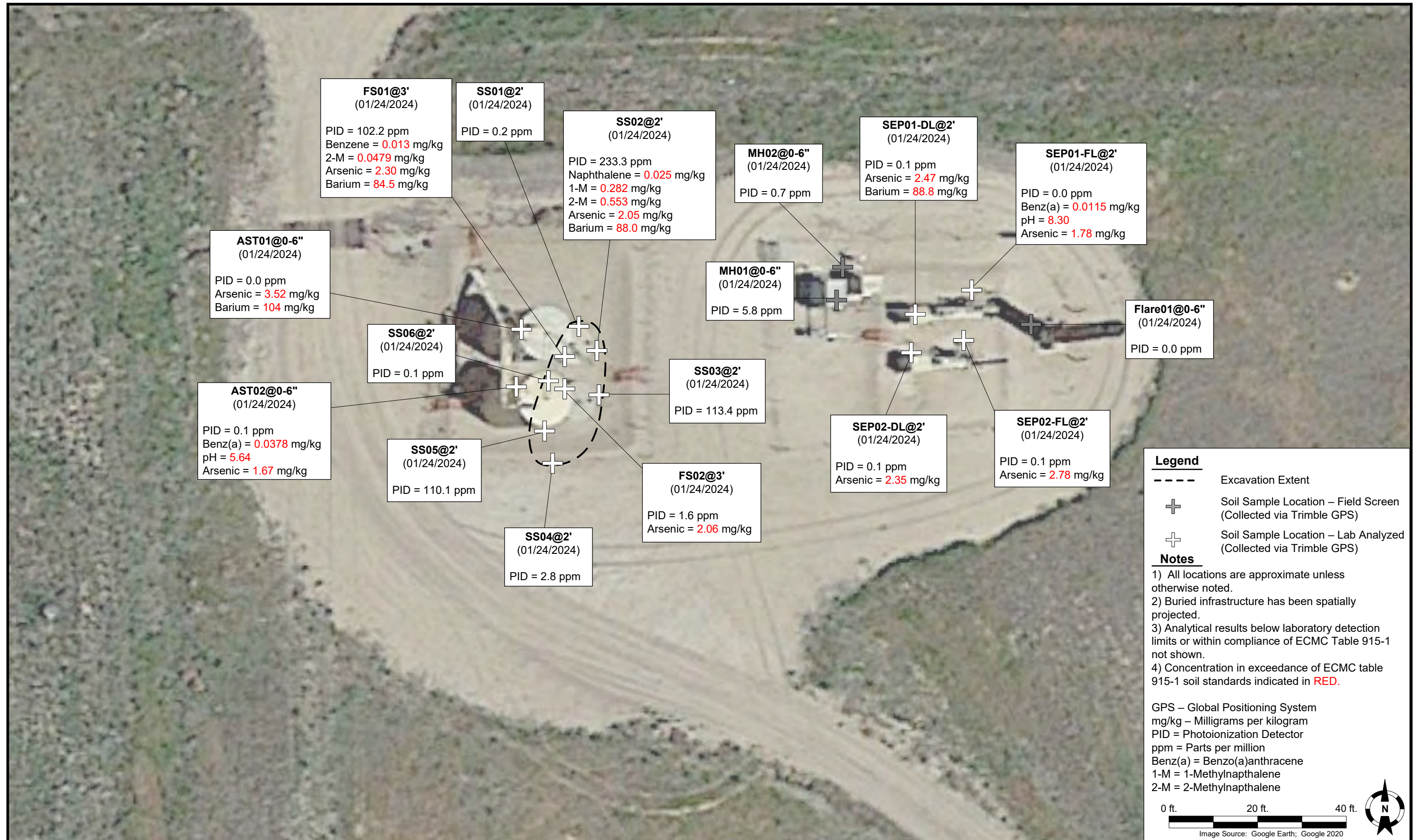


Tasman, Inc.
6855 W. 119th Ave
Broomfield, CO 80020

Noble Energy, Inc - DJ Basin
Houndskeeper H01-17 Tank Battery
NWNE, Section 1, Township 3 North, Range 65 West
Weld County, Colorado

Site Location Map

Figure
1



Legend

- - - - Excavation Extent
- + Soil Sample Location – Field Screen (Collected via Trimble GPS)
- + Soil Sample Location – Lab Analyzed (Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Buried infrastructure has been spatially projected.
- 3) Analytical results below laboratory detection limits or within compliance of ECMC Table 915-1 not shown.
- 4) Concentration in exceedance of ECMC table 915-1 soil standards indicated in **RED**.

GPS – Global Positioning System
 mg/kg – Milligrams per kilogram
 PID = Photoionization Detector
 ppm = Parts per million
 Benz(a) = Benzo(a)anthracene
 1-M = 1-Methylnaphthalene
 2-M = 2-Methylnaphthalene

0 ft. 20 ft. 40 ft.

Image Source: Google Earth; Google 2020

DATE: 02/01/2024

DESIGNED BY: JW

DRAWN BY: EH

TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6855 W 119th Avenue
Broomfield, CO 80020

Noble Energy, Inc. – DJ Basin
Houndskeeper H01-17
 NWNE, Section 1, Township 3 North, Range 65 West
 Weld County, Colorado

Tank Battery Closure & Soil
 Analytical Results Map
 (01/24/2024)

FIGURE
2

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 01, 2024

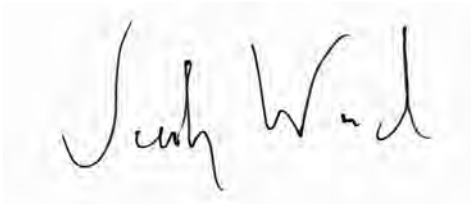
Jacob Whritenour
Tasman Geosciences
6855 W. 119th Ave.
Broomfield, CO 80020

RE: Noble - Houndskeeper HOI-17 Tank Battery

Work Order #2401417

Enclosed are the results of analyses for samples received by Summit Scientific on 01/24/24 17:47. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Jacob Wood For Paul Shrewsbury
President



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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN

Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@2'	2401417-02	Soil	01/24/24 10:33	01/24/24 17:47
FS01@3'	2401417-07	Soil	01/24/24 10:58	01/24/24 17:47
FS02@3'	2401417-08	Soil	01/24/24 11:02	01/24/24 17:47
AST02@0-6"	2401417-09	Soil	01/24/24 11:09	01/24/24 17:47
AST01@0-6"	2401417-10	Soil	01/24/24 11:13	01/24/24 17:47
SEP01-FL@2'	2401417-11	Soil	01/24/24 11:49	01/24/24 17:47
SEP02-FL@2'	2401417-12	Soil	01/24/24 11:54	01/24/24 17:47
SEP01-DL@2'	2401417-13	Soil	01/24/24 12:02	01/24/24 17:47
SEP02-DL@2'	2401417-14	Soil	01/24/24 12:06	01/24/24 17:47

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.

S₂

Sample Receipt Checklist

S2 Work Order# 2401417Client: Noble Gasman Client Project ID: Groundskeeper H1-17 Tank BattalShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____
 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? ⁽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"/>	on ICE
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 checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Some time stamps did not match
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.

AS
Custodian Printed Name

1/21/24
Date/Time



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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SS02@2'
2401417-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0893	01/25/24	01/29/24	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	0.025	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	25	0.50		"	"	"	"	"	"	

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0420	105 %		50-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>	0.0362	90.4 %		50-150		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0742	185 %		50-150		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	240	50		mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	50	50		"	"	"	"	"	"	

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: o-Terphenyl</i>	6.75	54.0 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SS02@2'
2401417-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/26/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.00598	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	0.282	0.00500	"	"	"	"	"	"	E
2-Methylnaphthalene	0.553	0.00500	"	"	"	"	"	"	E

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0282	84.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0210	63.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 10:33**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SS02@2'
2401417-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.05	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B
Barium	88.0	0.400	"	"	"	"	"	"
Cadmium	0.202	0.200	"	"	"	"	"	"
Copper	5.28	0.400	"	"	"	"	"	"
Lead	7.18	0.200	"	"	"	"	"	"
Nickel	4.96	0.400	"	"	"	"	"	"
Silver	0.0418	0.0200	"	"	"	"	"	"
Zinc	21.0	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	37.1	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	7.79	0.0500	"	"	"	"	"	"	
Sodium	23.8	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.928	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 10:33**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SS02@2'
2401417-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	83.3	%	1	BHA0886	01/25/24	01/25/24	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.431	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.49		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS01@3'
2401417-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.013	0.0020	mg/kg	1	BHA0893	01/25/24	01/28/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0098	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	3.4	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0401	100 %	50-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>	0.0413	103 %	50-150		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0484	121 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>	4.82	38.6 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS01@3'
2401417-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/26/24	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	0.0219	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	0.0479	0.00500	"	"	"	"	"	"	

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0206	61.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0187	56.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 10:58**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS01@3'
2401417-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.30	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B
Barium	84.5	0.400	"	"	"	"	"	"
Cadmium	0.237	0.200	"	"	"	"	"	"
Copper	6.10	0.400	"	"	"	"	"	"
Lead	8.01	0.200	"	"	"	"	"	"
Nickel	5.13	0.400	"	"	"	"	"	"
Silver	0.0326	0.0200	"	"	"	"	"	"
Zinc	20.5	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1720	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	268	0.0500	"	"	"	"	"	"	
Sodium	77.9	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.461	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 10:58**

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

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS01@3'
2401417-07 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	82.3	%	1	BHA0886	01/25/24	01/25/24	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.520	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 10:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.25		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS02@3'
2401417-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0399	99.7 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0421	105 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0435	109 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	5.22	41.7 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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6855 W. 119th Ave.
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Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS02@3'
2401417-08 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/26/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.0113	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.00705	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.00706	0.00500	"	"	"	"	"	"	
Pyrene	0.00892	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0280	84.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0230	68.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 11:02**

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

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS02@3'
2401417-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.06	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B
Barium	74.8	0.400	"	"	"	"	"	"
Cadmium	0.230	0.200	"	"	"	"	"	"
Copper	5.28	0.400	"	"	"	"	"	"
Lead	7.45	0.200	"	"	"	"	"	"
Nickel	4.65	0.400	"	"	"	"	"	"
Silver	0.0270	0.0200	"	"	"	"	"	"
Zinc	20.2	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	49.2	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	7.67	0.0500	"	"	"	"	"	"	
Sodium	9.67	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.339	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 11:02**

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

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

FS02@3'
2401417-08 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	88.8	%	1	BHA0886	01/25/24	01/25/24	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.277	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.82		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST02@0-6"
2401417-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0388	97.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0410	103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0427	107 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	4.41	35.3 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST02@0-6"
2401417-09 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/26/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.0378	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	0.0322	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.0520	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.0224	0.00500	"	"	"	"	"	"	
Chrysene	0.0303	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.0228	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.0300	0.00500	"	"	"	"	"	"	
Pyrene	0.0225	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0227	68.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0231	69.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 11:09**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST02@0-6"
2401417-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	1.67	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B
Barium	50.3	0.400	"	"	"	"	"	"
Cadmium	0.200	0.200	"	"	"	"	"	"
Copper	5.00	0.400	"	"	"	"	"	"
Lead	8.01	0.200	"	"	"	"	"	"
Nickel	3.62	0.400	"	"	"	"	"	"
Silver	0.0228	0.0200	"	"	"	"	"	"
Zinc	18.8	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	95.6	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	32.1	0.0500	"	"	"	"	"	"	
Sodium	2.47	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0558	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 11:09**

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

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST02@0-6"
2401417-09 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	87.8	%	1	BHA0886	01/25/24	01/25/24	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 11:09**

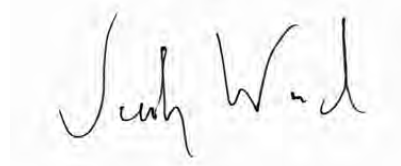
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.74	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 11:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	5.64		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

Summit Scientific



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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST01@0-6"
2401417-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 11:13**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0400	100 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0426	107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0426	107 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	6.23	49.9 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST01@0-6"
2401417-10 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/27/24	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: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0203	61.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0192	57.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 11:13**

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

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST01@0-6"
2401417-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.52	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B	
Barium	104	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	5.39	0.400	"	"	"	"	"	"	
Lead	7.18	0.200	"	"	"	"	"	"	
Nickel	6.43	0.400	"	"	"	"	"	"	
Silver	0.0380	0.0200	"	"	"	"	"	"	
Zinc	21.5	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	44.6	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	9.72	0.0500	"	"	"	"	"	"	
Sodium	6.78	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.239	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

AST01@0-6"
2401417-10 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.3		%	1	BHA0886	01/25/24	01/25/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.231	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.14		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-FL@2'
2401417-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0408	102 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0417	104 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0428	107 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	5.66	45.3 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-FL@2'
2401417-11 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/27/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	"
Benzo (a) anthracene	0.0115	0.00500	"	"	"	"	"	"	"
Benzo (a) pyrene	0.00919	0.00500	"	"	"	"	"	"	"
Benzo (b) fluoranthene	0.0201	0.00500	"	"	"	"	"	"	"
Benzo (k) fluoranthene	0.00722	0.00500	"	"	"	"	"	"	"
Chrysene	0.0108	0.00500	"	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	"
Fluoranthene	0.0180	0.00500	"	"	"	"	"	"	"
Fluorene	ND	0.00500	"	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	0.0115	0.00500	"	"	"	"	"	"	"
Pyrene	0.0164	0.00500	"	"	"	"	"	"	"
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	"
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	"

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0267	80.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0263	78.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 11:49**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-FL@2'
2401417-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.78	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B	
Barium	47.1	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.05	0.400	"	"	"	"	"	"	
Lead	5.21	0.200	"	"	"	"	"	"	
Nickel	3.75	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	14.8	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2850	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	172	0.0500	"	"	"	"	"	"	
Sodium	3.95	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0194	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Tasman Geosciences
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Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-FL@2'
2401417-11 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	91.8			%	1	BHA0886	01/25/24	01/25/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.253	0.0100		mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.30			pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-FL@2'
2401417-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 11:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0399	99.8 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0414	104 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0417	104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	7.57	60.6 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-FL@2'
2401417-12 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/27/24	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	0.00514	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.00786	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0262	78.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0256	76.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 11:54**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-FL@2'
2401417-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.78	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B
Barium	64.0	0.400	"	"	"	"	"	"
Cadmium	0.219	0.200	"	"	"	"	"	"
Copper	5.00	0.400	"	"	"	"	"	"
Lead	6.00	0.200	"	"	"	"	"	"
Nickel	4.41	0.400	"	"	"	"	"	"
Silver	0.0233	0.0200	"	"	"	"	"	"
Zinc	17.0	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	236	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	10.7	0.0500	"	"	"	"	"	"	
Sodium	5.38	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0930	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 11:54**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-FL@2'
2401417-12 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	92.6	%	1	BHA0886	01/25/24	01/25/24	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.313	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.99		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

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Broomfield CO, 80020

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-DL@2'
2401417-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0380	94.9 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0410	102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0427	107 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	5.54	44.4 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Houndskeeper HOI-17 Tank Battery
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Reported:
02/01/24 13:37

SEP01-DL@2'
2401417-13 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/27/24	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: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0246	73.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0244	73.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 12:02**

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-DL@2'
2401417-13 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.47	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B	
Barium	88.8	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.81	0.400	"	"	"	"	"	"	
Lead	7.06	0.200	"	"	"	"	"	"	
Nickel	5.09	0.400	"	"	"	"	"	"	
Silver	0.0239	0.0200	"	"	"	"	"	"	
Zinc	19.3	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	89.5	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	20.8	0.0500	"	"	"	"	"	"	
Sodium	95.8	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.37	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP01-DL@2'
2401417-13 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	87.0			%	1	BHA0886	01/25/24	01/25/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.976	0.0100		mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 12:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.93			pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-DL@2'
2401417-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0893	01/25/24	01/28/24	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: **01/24/24 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0403	101 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0415	104 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0429	107 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0896	01/25/24	01/26/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	6.42	51.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-DL@2'
2401417-14 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0933	01/26/24	01/27/24	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: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0251	75.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0215	64.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0963	01/29/24	01/31/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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6855 W. 119th Ave.
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Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

SEP02-DL@2'
2401417-14 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.35	0.200	mg/kg dry	1	BHA1072	01/30/24	02/01/24	EPA 6020B	
Barium	73.0	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.26	0.400	"	"	"	"	"	"	
Lead	5.02	0.200	"	"	"	"	"	"	
Nickel	4.36	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	19.2	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0910	01/25/24	01/25/24	EPA 7196A	

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

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	66.2	0.0500	mg/L dry	1	BHA0903	01/25/24	01/26/24	EPA 6020B	
Magnesium	13.9	0.0500	"	"	"	"	"	"	
Sodium	2.66	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0776	0.00100	units	1	BHA1000	01/29/24	01/29/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project Number: UWRWE-A2715-ABN
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Reported:
02/01/24 13:37

SEP02-DL@2'
2401417-14 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.6		%	1	BHA0886	01/25/24	01/25/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.357	0.0100	mmhos/cm	1	BHA0919	01/26/24	01/26/24	EPA 120.1	

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

Date Sampled: **01/24/24 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.96		pH Units	1	BHA0918	01/26/24	01/26/24	EPA 9045D	

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Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHA0893 - EPA 5030 Soil MS

Blank (BHA0893-BLK1)

Prepared: 01/25/24 Analyzed: 01/27/24

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0391		"	0.0400		97.7	50-150			
<i>Surrogate: Toluene-d8</i>	0.0410		"	0.0400		102	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0428		"	0.0400		107	50-150			

LCS (BHA0893-BS1)

Prepared: 01/25/24 Analyzed: 01/27/24

Benzene	0.112	0.0020	mg/kg	0.100		112	70-130			
Toluene	0.108	0.0050	"	0.100		108	70-130			
Ethylbenzene	0.0864	0.0050	"	0.100		86.4	70-130			
m,p-Xylene	0.171	0.010	"	0.200		85.4	70-130			
o-Xylene	0.0848	0.0050	"	0.100		84.8	70-130			
1,2,4-Trimethylbenzene	0.0744	0.0050	"	0.100		74.4	70-130			
1,3,5-Trimethylbenzene	0.0794	0.0050	"	0.100		79.4	70-130			
Naphthalene	0.0812	0.0038	"	0.100		81.2	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0391		"	0.0400		97.7	50-150			
<i>Surrogate: Toluene-d8</i>	0.0426		"	0.0400		106	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0426		"	0.0400		106	50-150			

Matrix Spike (BHA0893-MS1)

Source: 2401305-01

Prepared: 01/25/24 Analyzed: 01/28/24

Benzene	0.102	0.0020	mg/kg	0.100	ND	102	70-130			
Toluene	0.0957	0.0050	"	0.100	ND	95.7	70-130			
Ethylbenzene	0.0773	0.0050	"	0.100	ND	77.3	70-130			
m,p-Xylene	0.146	0.010	"	0.200	ND	72.8	70-130			
o-Xylene	0.0739	0.0050	"	0.100	ND	73.9	70-130			
1,2,4-Trimethylbenzene	0.0574	0.0050	"	0.100	ND	57.4	70-130			QM-07
1,3,5-Trimethylbenzene	0.0649	0.0050	"	0.100	ND	64.9	70-130			QM-07
Naphthalene	0.0791	0.0038	"	0.100	ND	79.1	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0405		"	0.0400		101	50-150			
<i>Surrogate: Toluene-d8</i>	0.0413		"	0.0400		103	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0418		"	0.0400		104	50-150			

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHA0893 - EPA 5030 Soil MS

Matrix Spike Dup (BHA0893-MSD1)	Source: 2401305-01			Prepared: 01/25/24 Analyzed: 01/28/24						
Benzene	0.0995	0.0020	mg/kg	0.100	ND	99.5	70-130	2.88	30	
Toluene	0.0931	0.0050	"	0.100	ND	93.1	70-130	2.83	30	
Ethylbenzene	0.0751	0.0050	"	0.100	ND	75.1	70-130	2.91	30	
m,p-Xylene	0.145	0.010	"	0.200	ND	72.4	70-130	0.475	30	
o-Xylene	0.0712	0.0050	"	0.100	ND	71.2	70-130	3.76	30	
1,2,4-Trimethylbenzene	0.0572	0.0050	"	0.100	ND	57.2	70-130	0.471	30	QM-07
1,3,5-Trimethylbenzene	0.0629	0.0050	"	0.100	ND	62.9	70-130	3.10	30	QM-07
Naphthalene	0.0843	0.0038	"	0.100	ND	84.3	70-130	6.32	30	
Surrogate: 1,2-Dichloroethane-d4	0.0415		"	0.0400		104	50-150			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0418		"	0.0400		105	50-150			

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Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BHA0896 - EPA 3550A

Blank (BHA0896-BLK1)

Prepared & Analyzed: 01/25/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	8.62		"	12.5		68.9	30-150				

LCS (BHA0896-BS1)

Prepared & Analyzed: 01/25/24

C10-C28 (DRO)	533	50	mg/kg	500		107	70-130				
Surrogate: <i>o</i> -Terphenyl	10.8		"	12.5		86.2	30-150				

Matrix Spike (BHA0896-MS1)

Source: 2401305-01

Prepared & Analyzed: 01/25/24

C10-C28 (DRO)	500	50	mg/kg	500	10.8	97.7	70-130				
Surrogate: <i>o</i> -Terphenyl	9.24		"	12.5		74.0	30-150				

Matrix Spike Dup (BHA0896-MSD1)

Source: 2401305-01

Prepared & Analyzed: 01/25/24

C10-C28 (DRO)	449	50	mg/kg	500	10.8	87.6	70-130	10.7	20		
Surrogate: <i>o</i> -Terphenyl	9.04		"	12.5		72.3	30-150				

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Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

PAH by EPA Method 8270D SIM - Quality Control
Summit Scientific

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

Batch BHA0933 - EPA 5030 Soil MS

Blank (BHA0933-BLK1)

Prepared & Analyzed: 01/26/24

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	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0383</i>		"	<i>0.0333</i>		<i>115</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0329</i>		"	<i>0.0333</i>		<i>98.6</i>		<i>40-150</i>		

LCS (BHA0933-BS1)

Prepared & Analyzed: 01/26/24

Acenaphthene	0.0386	0.00500	mg/kg	0.0333	116	31-137
Anthracene	0.0399	0.00500	"	0.0333	120	30-120
Benzo (a) anthracene	0.0324	0.00500	"	0.0333	97.2	30-120
Benzo (a) pyrene	0.0377	0.00500	"	0.0333	113	30-120
Benzo (b) fluoranthene	0.0370	0.00500	"	0.0333	111	30-120
Benzo (k) fluoranthene	0.0358	0.00500	"	0.0333	107	30-120
Chrysene	0.0396	0.00500	"	0.0333	119	30-120
Dibenz (a,h) anthracene	0.0371	0.00500	"	0.0333	111	30-120
Fluoranthene	0.0369	0.00500	"	0.0333	111	30-120
Fluorene	0.0368	0.00500	"	0.0333	110	30-120
Indeno (1,2,3-cd) pyrene	0.0262	0.00500	"	0.0333	78.6	30-120
Pyrene	0.0367	0.00500	"	0.0333	110	35-142
1-Methylnaphthalene	0.0257	0.00500	"	0.0333	77.2	35-142
2-Methylnaphthalene	0.0372	0.00500	"	0.0333	112	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0325</i>		"	<i>0.0333</i>	<i>97.5</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0392</i>		"	<i>0.0333</i>	<i>118</i>	<i>40-150</i>

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Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BHA0933 - EPA 5030 Soil MS

Matrix Spike (BHA0933-MS1)	Source: 2401417-02			Prepared & Analyzed: 01/26/24								
Acenaphthene	0.0176	0.00500	mg/kg	0.0333	ND	52.9	31-137					
Anthracene	0.0192	0.00500	"	0.0333	ND	57.6	30-120					
Benzo (a) anthracene	0.0172	0.00500	"	0.0333	0.00598	33.5	30-120					
Benzo (a) pyrene	0.0180	0.00500	"	0.0333	ND	54.1	30-120					
Benzo (b) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.6	30-120					
Benzo (k) fluoranthene	0.0212	0.00500	"	0.0333	ND	63.5	30-120					
Chrysene	0.0202	0.00500	"	0.0333	ND	60.5	30-120					
Dibenz (a,h) anthracene	0.0177	0.00500	"	0.0333	ND	53.2	30-120					
Fluoranthene	0.0225	0.00500	"	0.0333	ND	67.6	30-120					
Fluorene	0.0191	0.00500	"	0.0333	ND	57.3	30-120					
Indeno (1,2,3-cd) pyrene	0.0206	0.00500	"	0.0333	ND	61.9	30-120					
Pyrene	0.0213	0.00500	"	0.0333	ND	63.8	35-142					
1-Methylnaphthalene	0.0188	0.00500	"	0.0333	0.282	NR	15-130					QM-01
2-Methylnaphthalene	0.0195	0.00500	"	0.0333	0.553	NR	15-130					QM-01
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0198</i>		<i>"</i>	<i>0.0333</i>		<i>59.3</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0222</i>		<i>"</i>	<i>0.0333</i>		<i>66.5</i>	<i>40-150</i>					

Matrix Spike Dup (BHA0933-MSD1)	Source: 2401417-02			Prepared & Analyzed: 01/26/24								
Acenaphthene	0.0229	0.00500	mg/kg	0.0333	ND	68.7	31-137	26.1	30			
Anthracene	0.0210	0.00500	"	0.0333	ND	62.9	30-120	8.84	30			
Benzo (a) anthracene	0.0165	0.00500	"	0.0333	0.00598	31.4	30-120	4.15	30			
Benzo (a) pyrene	0.0141	0.00500	"	0.0333	ND	42.4	30-120	24.2	30			
Benzo (b) fluoranthene	0.0155	0.00500	"	0.0333	ND	46.5	30-120	21.3	30			
Benzo (k) fluoranthene	0.0159	0.00500	"	0.0333	ND	47.7	30-120	28.3	30			
Chrysene	0.0156	0.00500	"	0.0333	ND	46.9	30-120	25.4	30			
Dibenz (a,h) anthracene	0.0158	0.00500	"	0.0333	ND	47.4	30-120	11.6	30			
Fluoranthene	0.0197	0.00500	"	0.0333	ND	59.2	30-120	13.2	30			
Fluorene	0.0201	0.00500	"	0.0333	ND	60.4	30-120	5.27	30			
Indeno (1,2,3-cd) pyrene	0.0160	0.00500	"	0.0333	ND	47.9	30-120	25.6	30			
Pyrene	0.0148	0.00500	"	0.0333	ND	44.4	35-142	35.8	30			QM-01
1-Methylnaphthalene	0.0183	0.00500	"	0.0333	0.282	NR	15-130	2.40	50			QM-01
2-Methylnaphthalene	0.0148	0.00500	"	0.0333	0.553	NR	15-130	27.6	50			QM-01
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0181</i>		<i>"</i>	<i>0.0333</i>		<i>54.3</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0185</i>		<i>"</i>	<i>0.0333</i>		<i>55.6</i>	<i>40-150</i>					

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

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

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

Batch BHA0963 - EPA 3050B

Blank (BHA0963-BLK1)

Prepared: 01/29/24 Analyzed: 01/31/24

Boron ND 2.00 mg/L

LCS (BHA0963-BS1)

Prepared: 01/29/24 Analyzed: 01/31/24

Boron 5.93 2.00 mg/L 5.00 119 80-120

Duplicate (BHA0963-DUP1)

Source: 2401156-01

Prepared: 01/29/24 Analyzed: 01/31/24

Boron 0.161 2.00 mg/L 0.182 12.1 20

Matrix Spike (BHA0963-MS1)

Source: 2401156-01

Prepared: 01/29/24 Analyzed: 01/31/24

Boron 5.53 2.00 mg/L 5.00 0.182 107 75-125

Matrix Spike Dup (BHA0963-MSD1)

Source: 2401156-01

Prepared: 01/29/24 Analyzed: 01/31/24

Boron 5.72 2.00 mg/L 5.00 0.182 111 75-125 3.50 25

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHA1072 - EPA 3050B

Blank (BHA1072-BLK1)

Prepared: 01/30/24 Analyzed: 01/31/24

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							
Selenium	ND	0.260	"							

LCS (BHA1072-BS1)

Prepared: 01/30/24 Analyzed: 01/31/24

Arsenic	36.6	0.200	mg/kg wet	40.0	91.6	80-120
Barium	38.4	0.400	"	40.0	96.0	80-120
Cadmium	1.97	0.200	"	2.00	98.6	80-120
Copper	42.6	0.400	"	40.0	107	80-120
Lead	19.3	0.200	"	20.0	96.7	80-120
Nickel	41.6	0.400	"	40.0	104	80-120
Silver	1.95	0.0200	"	2.00	97.4	80-120
Zinc	42.4	0.400	"	40.0	106	80-120
Selenium	4.26	0.260	"	4.00	106	80-120

Duplicate (BHA1072-DUP1)

Source: 2401414-03

Prepared: 01/30/24 Analyzed: 01/31/24

Arsenic	1.49	0.200	mg/kg dry	1.77	17.2	20
Barium	63.8	0.400	"	64.6	1.16	20
Cadmium	0.107	0.200	"	0.116	8.42	20
Copper	4.98	0.400	"	5.24	5.11	20
Lead	5.17	0.200	"	5.57	7.53	20
Nickel	3.58	0.400	"	3.98	10.7	20
Silver	0.0165	0.0200	"	0.0210	23.8	20
Zinc	17.3	0.400	"	20.2	15.5	20
Selenium	ND	0.260	"	ND		20

QR-01

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHA1072 - EPA 3050B

Matrix Spike (BHA1072-MS1)

Source: 2401414-03

Prepared: 01/30/24 Analyzed: 01/31/24

Arsenic	31.2	0.200	mg/kg dry	44.7	1.77	65.8	75-125				QM-07
Barium	96.0	0.400	"	44.7	64.6	70.3	75-125				QM-07
Cadmium	1.72	0.200	"	2.24	0.116	71.8	75-125				QM-07
Copper	30.0	0.400	"	44.7	5.24	55.3	75-125				QM-07
Lead	21.4	0.200	"	22.4	5.57	71.0	75-125				QM-07
Nickel	28.0	0.400	"	44.7	3.98	53.6	75-125				QM-07
Silver	1.55	0.0200	"	2.24	0.0210	68.3	75-125				QM-07
Zinc	48.5	0.400	"	44.7	20.2	63.2	75-125				QM-07
Selenium	3.32	0.260	"	4.47	ND	74.1	75-125				QM-07

Matrix Spike Dup (BHA1072-MSD1)

Source: 2401414-03

Prepared: 01/30/24 Analyzed: 01/31/24

Arsenic	31.3	0.200	mg/kg dry	44.7	1.77	66.1	75-125	0.346	25		QM-07
Barium	97.1	0.400	"	44.7	64.6	72.8	75-125	1.16	25		QM-07
Cadmium	1.71	0.200	"	2.24	0.116	71.3	75-125	0.626	25		QM-07
Copper	28.9	0.400	"	44.7	5.24	53.0	75-125	3.63	25		QM-07
Lead	21.8	0.200	"	22.4	5.57	72.3	75-125	1.39	25		QM-07
Nickel	27.3	0.400	"	44.7	3.98	52.1	75-125	2.51	25		QM-07
Silver	1.55	0.0200	"	2.24	0.0210	68.5	75-125	0.202	25		QM-07
Zinc	46.8	0.400	"	44.7	20.2	59.4	75-125	3.54	25		QM-07
Selenium	3.35	0.260	"	4.47	ND	75.0	75-125	1.13	25		QM-07

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

Project: Noble - Houndskeeper HOI-17 Tank Battery
Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BHA0910 - 3060A Mod

Blank (BHA0910-BLK1)

Prepared & Analyzed: 01/25/24

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BHA0910-BS1)

Prepared & Analyzed: 01/25/24

Chromium, Hexavalent 23.0 0.30 mg/kg wet 25.0 92.2 80-120

Duplicate (BHA0910-DUP1)

Source: 2401263-02

Prepared & Analyzed: 01/25/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BHA0910-MS1)

Source: 2401263-02

Prepared & Analyzed: 01/25/24

Chromium, Hexavalent 28.3 0.30 mg/kg dry 30.0 ND 94.4 75-125

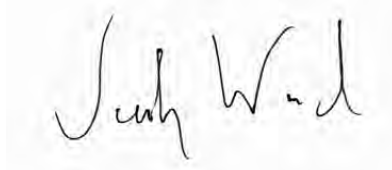
Matrix Spike Dup (BHA0910-MSD1)

Source: 2401263-02

Prepared & Analyzed: 01/25/24

Chromium, Hexavalent 28.5 0.30 mg/kg dry 30.0 ND 94.8 75-125 0.423 20

Summit Scientific



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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

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

Summit Scientific

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

Batch BHA0903 - General Preparation

Blank (BHA0903-BLK1)

Prepared: 01/25/24 Analyzed: 01/26/24

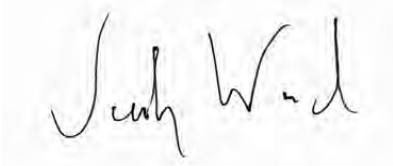
Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BHA0903-BS1)

Prepared: 01/25/24 Analyzed: 01/26/24

Calcium	5.62	0.0500	mg/L wet	5.00		112	70-130			
Magnesium	5.45	0.0500	"	5.00		109	70-130			
Sodium	5.37	0.0500	"	5.00		107	70-130			

Summit Scientific



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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

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

Summit Scientific

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

Batch BHA0886 - General Preparation

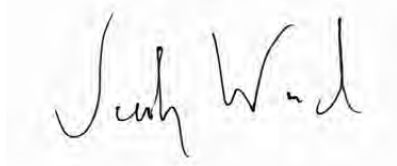
Duplicate (BHA0886-DUP1)

Source: 2401374-03

Prepared & Analyzed: 01/25/24

% Solids	89.6		%		88.7			1.02	20	
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Summit Scientific



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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

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

Summit Scientific

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

Batch BHA0919 - General Preparation

Blank (BHA0919-BLK1)

Prepared & Analyzed: 01/26/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHA0919-BS1)

Prepared & Analyzed: 01/26/24

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

Duplicate (BHA0919-DUP1)

Source: 2401271-02RE1 Prepared & Analyzed: 01/26/24

Specific Conductance (EC) 2.04 0.0100 mmhos/cm 2.04 0.0489 20

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

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

Summit Scientific

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

Batch BHA0918 - General Preparation

LCS (BHA0918-BS1)

Prepared & Analyzed: 01/26/24

pH 9.30 pH Units 9.18 101 95-105

Duplicate (BHA0918-DUP1)

Source: 2401382-01

Prepared & Analyzed: 01/26/24

pH 7.81 pH Units 7.91 1.27 20

Summit Scientific

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

Project: Noble - Houndskeeper HOI-17 Tank Battery

Project Number: UWRWE-A2715-ABN
Project Manager: Jacob Whritenour

Reported:
02/01/24 13:37

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- 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