

SECOND QUARTER 2024 SITE MONITORING DATA
HIGHLAND 12-20 (FAC)

ECMC SPILL TRACKING # 483859
ECMC REMEDIATION # 24052

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

TABLE 1
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY



Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BGS) ⁽¹⁾	Depth to LNAPL (ft.) ⁽¹⁾	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	05/24/23	4722.73	18.47	6.68	ND	ND	4716.23
BH01	08/10/23	4722.73	17.09	7.17	ND	ND	4715.74
BH01	11/09/23	4722.73	18.08	5.02	ND	ND	4717.89
BH01	02/14/24	4722.73	10.02	6.76	ND	ND	4716.15
BH01	05/06/24	4722.73	10.05	6.87	ND	ND	4716.04
BH02	05/24/23	4725.33	20.05	7.02	ND	ND	4715.95
BH02	08/10/23	4725.33	19.80	7.35	ND	ND	4715.62
BH02	11/09/23	Monitoring Well Destroyed					
BH02R	02/14/24	4723.06	16.99	7.57	ND	ND	4716.01
BH02R	05/06/24	4723.06	16.98	7.67	ND	ND	4715.91
BH03	05/24/23	4721.39	17.07	5.20	ND	ND	4716.33
BH03	08/10/23	4721.39	17.67	5.92	ND	ND	4715.61
BH03	11/09/23	4721.39	17.68	3.77	ND	ND	4717.76
BH03	02/14/24	Monitoring Well Not Located					
BH03	05/06/24	4721.39	17.49	6.53	ND	ND	4715.00
BH04	05/24/23	4722.87	17.99	6.60	ND	ND	4716.43
BH04	08/10/23	4722.87	17.79	7.26	ND	ND	4715.77
BH04	11/09/23	4722.87	17.68	5.11	ND	ND	4717.92
BH04	02/14/24	4722.87	17.69	6.79	ND	ND	4716.24
BH04	05/06/24	4722.87	17.70	6.86	ND	ND	4716.17
BH05	05/24/23	4723.50	17.50	7.44	ND	ND	4716.24
BH05	08/10/23	4723.50	17.48	7.89	ND	ND	4715.79
BH05	11/09/23	4723.50	17.41	5.70	ND	ND	4717.98
BH05	02/14/24	4723.50	17.40	7.38	ND	ND	4716.30
BH05	05/06/24	4723.50	17.46	7.49	ND	ND	4716.19
BH06	05/24/23	4723.57	17.64	7.18	ND	ND	4716.59
BH06	08/10/23	4723.57	17.64	7.92	ND	ND	4715.85
BH06	11/09/23	4723.57	17.84	5.87	ND	ND	4717.90
BH06	02/14/24	4723.57	17.50	9.44	ND	ND	4714.33
BH06	05/06/24	4723.57	17.54	9.52	ND	ND	4714.25
BH07 ⁽²⁾	03/29/24	4723.58	17.75	7.76	ND	ND	4716.08
BH07	05/06/24	4723.58	17.75	7.81	ND	ND	4716.03

TABLE 1
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY



Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft.) ⁽¹⁾	Depth to LNAPL (ft.) ⁽¹⁾	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
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Notes:

⁽¹⁾ Depth to water measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

⁽²⁾ Due to a clerical error, BH07 was sampled on March 29, 2024.

* Groundwater elevation is corrected for product thickness (when present) using the following calculation:

Groundwater elevation = (TOC Elevation - Measured Depth to Water)+(LNAPL Thickness in Well x LNAPL Relative Density)

LNAPL relative density was estimated to be 0.75

Definitions:

ft. = Feet

AMSL = Above mean sea level

BTOC = Below top of casing

BGS = Below ground surface

LNAPL = Light non-aqueous phase liquid

ND = No LNAPL detected

TABLE 2
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY



Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Benz(a) (µg/L)	1-M (µg/L)	2-M (µg/L)	TDS (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Dissolved Barium (µg/L)
ECMC Standard ⁽¹⁾		5	560	700	1,400	140	67	67	0.16 ⁽²⁾	1.1 ⁽³⁾	3.6 ⁽³⁾	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background	2,000 ⁽⁵⁾
BH01	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,120	452	1,870	NA
BH01	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	1.83	0.574	3,060	570	2,040	NA
BH01	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	1.49	<0.500	2,610	262	1,210	NA
BH01	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,120	590	2,330	35.5
BH01	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,690	557	2,250	24.9
BH02	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,490	493	2,160	NA
BH02	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,980	521	2,310	NA
BH02	11/09/23	Well Not Sampled - Monitoring Well Destroyed													
BH02R	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,600	651	2,750	33.4
BH02R	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,880	538	2,550	21.1
BH03	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,080	419	1,970	NA
BH03	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,220	296	1,450	NA
BH03	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,110	112	486	NA
BH03	02/14/24	Well Not Sampled - Unable to Locate													
BH03	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,950	581	2,650	21.8
BH04 ⁽⁴⁾	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,620	580	2,260	NA
BH04 ⁽⁴⁾	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,500	203	2,250	NA
BH04 ⁽⁴⁾	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,510	128	579	NA
BH04	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,320	591	2,600	20.1
BH04	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,310	738	2,920	17.7
BH05 ⁽⁴⁾	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,190	449	2,000	NA
BH05 ⁽⁴⁾	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,770	474	2,000	NA
BH05 ⁽⁴⁾	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,930	277	1,600	NA
BH05 ⁽⁴⁾	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,490	653	2,770	21.4
BH05 ⁽⁴⁾	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,860	553	2,640	26.2
BH06 ⁽⁴⁾	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,590	259	1,220	NA
BH06 ⁽⁴⁾	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,410	702	2,480	NA
BH06 ⁽⁴⁾	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,200	104	560	NA
BH06	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,470	659	2,730	19.4
BH06	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,620	403	2,570	21.4
BH07 ⁽⁶⁾	03/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,660	655	2,580	38.9
BH07 ⁽⁴⁾	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,280	698	2,810	19.0

TABLE 2
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY



Notes:

- ⁽¹⁾ Groundwater standards referenced from 2 CCR 404-1, Table 915-1 (January 15, 2021).
⁽²⁾ Groundwater standards referenced from 5 CCR 1002-41, Table A (June 30, 2020).
⁽³⁾ Groundwater standards referenced from USEPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=0.1) November 2022.
⁽⁴⁾ Monitoring well used for inorganic background levels.
⁽⁵⁾ Dissolved barium groundwater standard referenced from the 5 CCR 1002-41, Regulation No. 41, Table 1, Domestic Water Supply Standards, January 31, 2013.
⁽⁶⁾ Due to a clerical error, BH07 was sampled on March 29, 2024.

Definitions:

< =	Analytical result is less than the indicated laboratory reporting limit
ECMC =	Colorado Energy and Carbon Management Commission
NA =	Constituent not analyzed
mg/L =	Milligrams per liter
µg/L =	Micrograms per liter
1,2,4 - TMB =	1,2,4 Trimethylbenzene
1,3,5 - TMB =	1,3,5 Trimethylbenzene
Benz(a) =	Benz(a)anthracene
1-M =	1-Methylnaphthalene
2-M =	2-Methylnaphthalene
TDS =	Total Dissolved Solids

Highlighted results are equal to or exceed the regulatory standard

Bold results are exceed the regulatory standard for inorganic parameters and are greater than 1.25x the site background concentrations

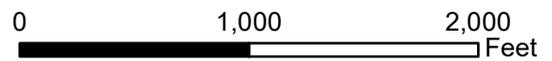
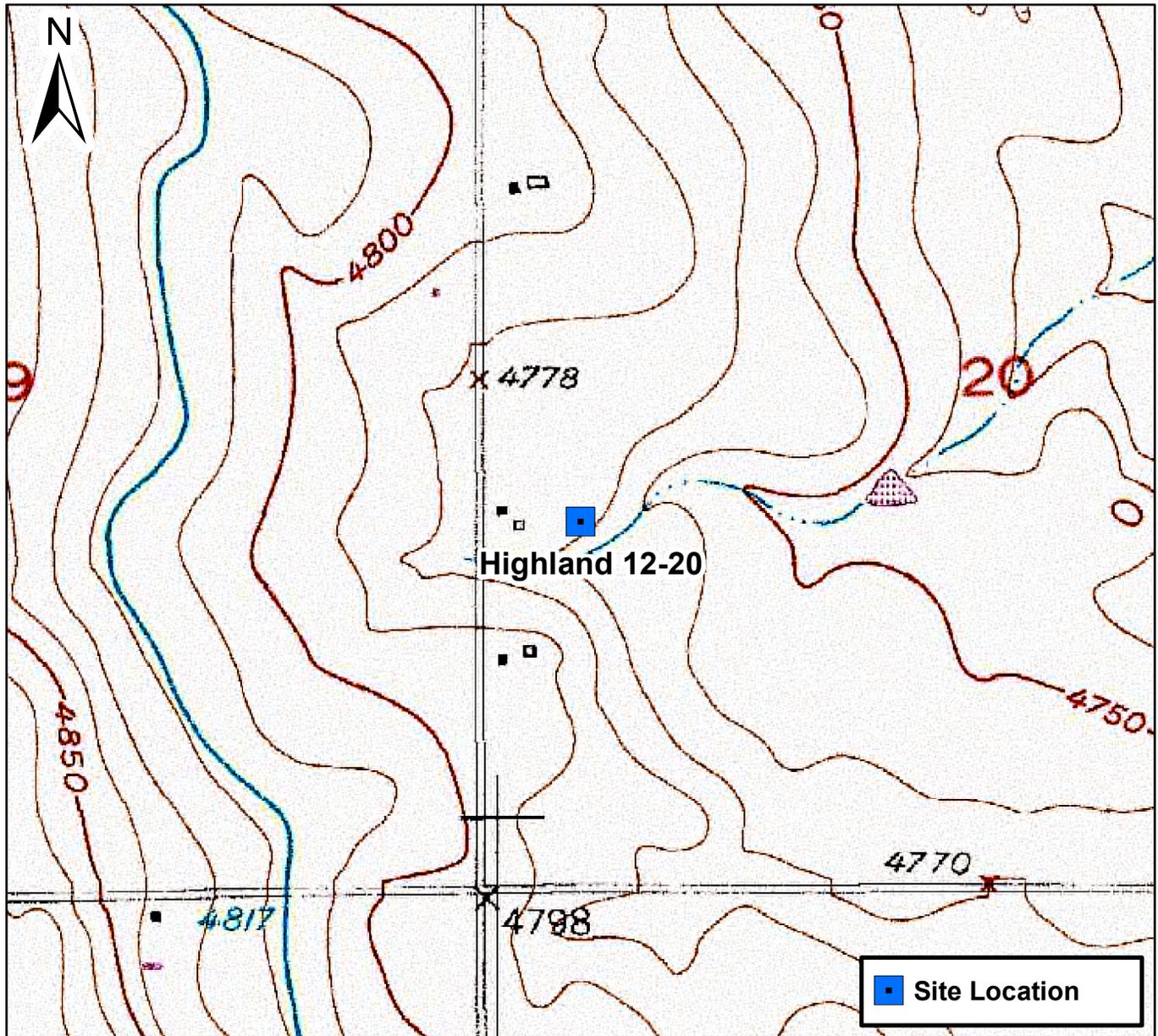
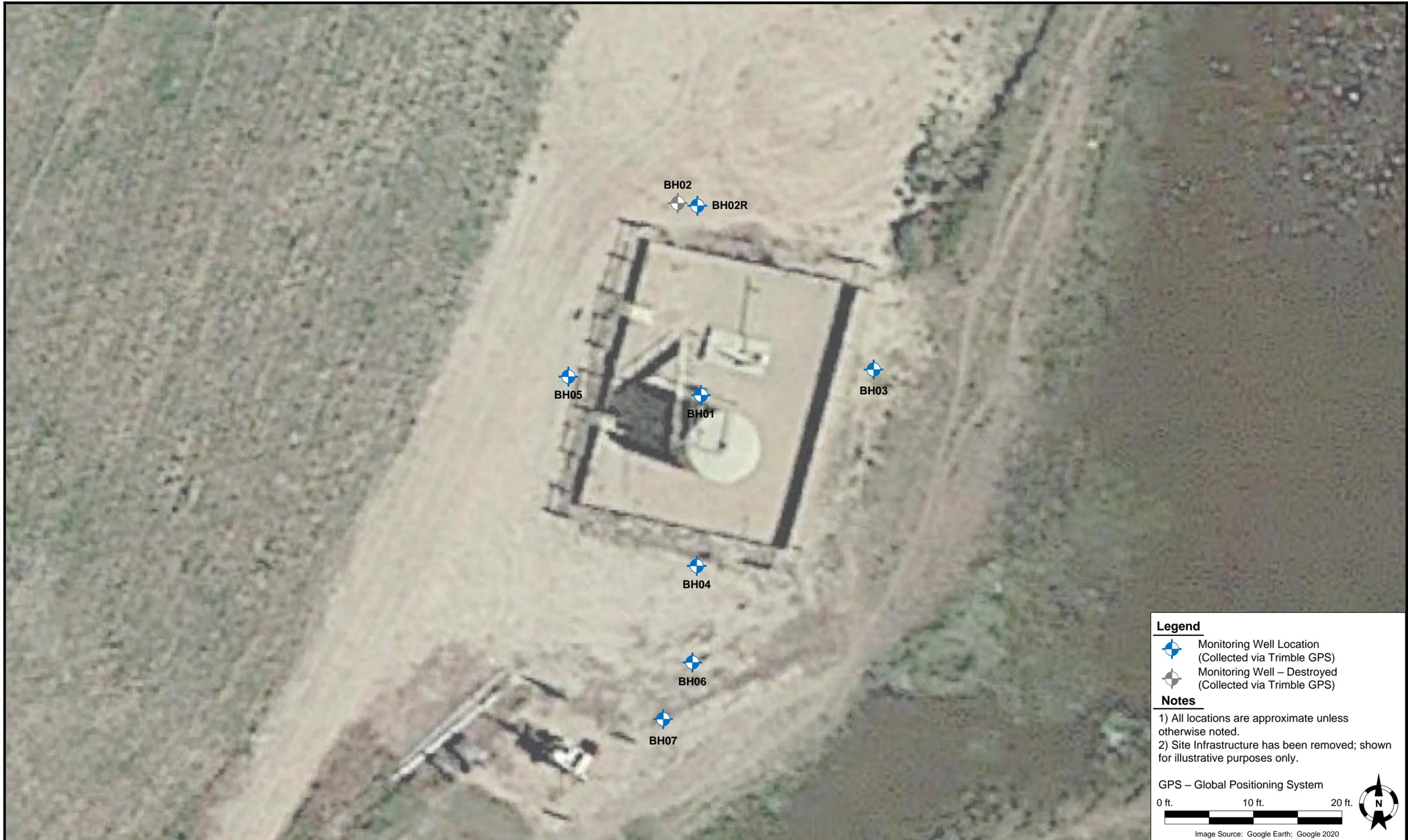


Figure 1

Site Location Map
 Highland 12-20
 NWSW S20 T4N R64W
 Weld County, Colorado





Legend

-  Monitoring Well Location
(Collected via Trimble GPS)
-  Monitoring Well – Destroyed
(Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Site Infrastructure has been removed; shown for illustrative purposes only.

GPS – Global Positioning System

0 ft. 10 ft. 20 ft.

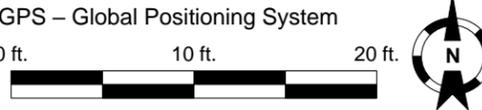


Image Source: Google Earth; Google 2020

DATE:	07/25/2023
DESIGNED BY:	JW
DRAWN BY:	HM



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

**Noble Energy, Inc. – DJ Basin
Highland 12-20 Facility**
NWSW, Section 20, Township 4 North, Range 64 West
Weld County, Colorado

Site Overview Map

FIGURE
2



Legend

-  Monitoring Well (Collected via Trimble GPS)
-  Destroyed Monitoring Well (Collected via Trimble GPS)
-  Groundwater Elevation Contour (Dashed Where Inferred)
- 4763.81** Measured Groundwater Elevation–ft. amsl
-  Approximate Groundwater Flow Direction

Notes

- 1) All locations are approximate unless otherwise noted
- 2) Site Infrastructure has been removed; shown for illustrative purposes only.

*- Monitoring well not used for contouring purposes due to anomalous groundwater elevation

GPS – Global Positioning System
ft. amsl – Feet above mean sea level

0 ft. 15 ft. 30 ft.

Image Source: Google Earth; Google 2021

DATE:	05/09/2024
DESIGNED BY:	JW
DRAWN BY:	J. Woffinden



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

Noble Energy, Inc. – DJ Basin
Highland 12-20 FAC
NWSW, Section 20, Township 4 North, Range 64 West
Weld County, Colorado

Groundwater Potentiometric
Surface Contour Map
(05/06/2024)

FIGURE
3

BH06	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3620
Chloride (mg/L)	403
Sulfate (mg/L)	2570
Barium (µg/L)	21.4

BH05	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3860
Chloride (mg/L)	553
Sulfate (mg/L)	2640
Barium (µg/L)	26.2

BH02R	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3880
Chloride (mg/L)	538
Sulfate (mg/L)	2550
Barium (µg/L)	21.1

BH01	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3690
Chloride (mg/L)	557
Sulfate (mg/L)	2250
Barium (µg/L)	24.9

BH03	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3950
Chloride (mg/L)	581
Sulfate (mg/L)	2650
Barium (µg/L)	21.8

BH04	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	4310
Chloride (mg/L)	738
Sulfate (mg/L)	2920
Barium (µg/L)	17.7

BH07	
Compound	05/06/24
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	4280
Chloride (mg/L)	698
Sulfate (mg/L)	2810
Barium (µg/L)	19.0

Legend

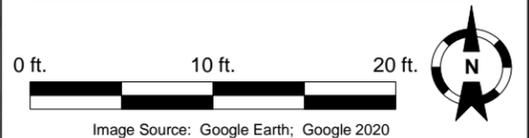
- Monitoring Well Location (Collected via Trimble GPS)
- Monitoring Well - Destroyed (Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Site Infrastructure has been removed; shown for illustrative purposes only.
- 3) Groundwater standards referenced from 5 CCR 1002-41, Table A (June 30,2020)
- 4) Groundwater standards referenced from USEPA Regional Screening Levels (RSL) Residential Tapwater Table (TR=1E-06, HQ=0.1) November 2022.
- 5) Dissolved barium groundwater standard referenced from the CCR 1002-41, Regulation No. 41, Table 1, Domestic Water Supply Standards, January 31, 2013.
- 6) Bold text denotes an exceedance of regulatory standards for inorganic parameters.

GPS – Global Positioning System
 mg/L – Milligrams per liter
 µg/L – Micrograms per liter
 ECMC – Colorado Energy and Carbon Management Commission

Contaminant of Concern	ECMC Concentration Standard
B - Benzene	5 ug/L
T - Toluene	560 ug/L
E - Ethylbenzene	700 ug/L
X – Total Xylenes	1,400 ug/L
N – Naphthalene	140 ug/L
1, 2, 4-Trimethylbenzene	67 ug/L
1, 3, 5-Trimethylbenzene	67 ug/L
Benzo(a)anthracene	0.16 ug/L ⁽³⁾
1-Methylnaphthalene	1.1 ug/L ⁽⁴⁾
2-Methylnaphthalene	3.6 ug/L ⁽⁴⁾
Total Dissolved Solids	1.25 x background
Cl – Chloride Ion	250 mg/L or 1.25 x background
SO ₄ – Sulfate Ion	250 mg/L or 1.25 x background
Dissolved Barium	2,000 ug/L ⁽⁵⁾



DATE: 06/19/2024
 DESIGNED BY: JW
 DRAWN BY: CL



**Noble Energy, Inc. – DJ Basin
 Highland 12-20 Facility**
 NWSW, Section 20, Township 4 North, Range 64 West
 Weld County, Colorado

Groundwater Analytical
 Results Map
 (05/06/2024)

FIGURE
 4

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 18, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

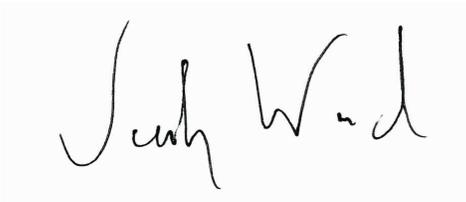
Broomfield, CO 80020

RE: Noble - Highland 12-20

Work Order #2405090

Enclosed are the results of analyses for samples received by Summit Scientific on 05/06/24 17:49. 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 a long, sweeping underline.

Jacob Wood For Paul Shrewsbury

President



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

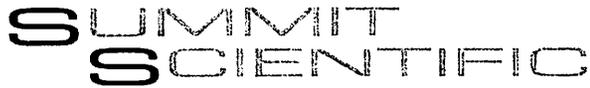
Reported:
06/18/24 12:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2405090-01	Water	05/06/24 12:55	05/06/24 17:49
BH02R	2405090-02	Water	05/06/24 13:11	05/06/24 17:49
BH03	2405090-03	Water	05/06/24 13:45	05/06/24 17:49
BH04	2405090-04	Water	05/06/24 12:18	05/06/24 17:49
BH05	2405090-05	Water	05/06/24 12:36	05/06/24 17:49
BH06	2405090-06	Water	05/06/24 11:49	05/06/24 17:49
BH07	2405090-07	Water	05/06/24 13:29	05/06/24 17:49

Summit Scientific

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

Lab ID	Page 1 of 1
2405090	

Send Data To:		Send Invoice To:
Client: Noble/Tasman	Project Manager: Jake Whritenour	Company: Noble Energy, Inc.
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location: Highland 12-20
City/State/Zip: Broomfield/CO/ 80020		AFE#:
Phone: 602-881-5716	Project Name: Highland 12-20	PO/Billing Codes:
Sampler Name: McKenzie Keywolds	Project Number: N/A	Contact: Dan Peterson

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Napthalene	1,2,4 TMB	1,3,5 TMB	TDS	Chlorine	Sulfate		PAH	
1	BH01	5/16/24	1255	7	3		4		X					X	X	X	X	X	X	X	X	PAHs - benz(a)anthracene, 1-m, 2-m + dissolved barium
2	BH02R		1311																			
3	BH03		1345																			
4	BH04		1218																			
5	BH05		1236																			
6	BH06		1149																			
7	BH07		1329																			
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by: <i>[Signature]</i>	Date/Time: 5/16/2024 1530	Received by: Tasman Lock Box	Date/Time: 5/16/2024 1530	TAT Business Days	Field DO	Notes:
Relinquished by: <i>[Signature]</i>	Date/Time: 5/16/24 1749	Received by: <i>[Signature]</i>	Date/Time: 5/16/24 1749	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: <u>6.4</u>	Corrected Temperature: <u>6</u>	IR gun #:		HNO3 lot #:		

S₂

Sample Receipt Checklist

S2 Work Order# 24050910

Client: Noble Gasman Client Project ID: Highland 12-20

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

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

Temp (°C) 000 Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on COC</u>
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>HCl</u>
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
5/6/24
Date/Time



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH01
2405090-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.4	100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.5	101 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	7.50	375 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.83	91.4 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH01
2405090-01 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Barium	24.9	1.00		ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	557	0.0600		mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2250	0.300		"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3690	10.0		mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH02R
2405090-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	13.7	103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.0	97.6 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	6.38	319 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.79	89.3 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH02R
2405090-02 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	21.1	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	538	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2550	0.300	"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3880	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH03
2405090-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	14.2	106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	99.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.3	99.5 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	6.47	324 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.81	90.7 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH03
2405090-03 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	21.8	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	581	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2650	0.300	"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3950	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH04
2405090-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	13.8	103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	98.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.4	100 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	6.36	318 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.85	92.6 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH04
2405090-04 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	17.7	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	738	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2920	0.300	"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	4310	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH05
2405090-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	14.1	106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	98.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.2	99.3 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	6.02	301 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.81	90.3 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH05
2405090-05 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	26.2	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	553	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2640	0.300	"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3860	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH06
2405090-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	13.9	104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.1	98.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.2	99.1 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	5.40	270 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.56	78.0 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH06
2405090-06 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	21.4	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	403	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2570	0.300	"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3620	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH07
2405090-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	99.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.1	98.6 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	6.22	311 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.85	92.5 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

BH07
2405090-07 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Barium	19.0	1.00		ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	698	0.0600		mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2810	0.300		"	"	"	"	"	"	I-02

Total Dissolved Solids by SM2540C

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	4280	10.0		mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHE0242 - EPA 5030 Water MS

Blank (BHE0242-BLK1)

Prepared: 05/07/24 Analyzed: 05/09/24

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Naphthalene	ND	1.0	"								
1,2,4-Trimethylbenzene	ND	1.0	"								
1,3,5-Trimethylbenzene	ND	1.0	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.7		"	13.3		103		23-173			
<i>Surrogate: Toluene-d8</i>	13.2		"	13.3		99.1		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	13.0		"	13.3		97.7		21-167			

LCS (BHE0242-BS1)

Prepared: 05/07/24 Analyzed: 05/09/24

Benzene	37.6	1.0	ug/l	33.3		113		51-132			
Toluene	36.5	1.0	"	33.3		109		51-138			
Ethylbenzene	37.6	1.0	"	33.3		113		58-146			
m,p-Xylene	72.5	2.0	"	66.7		109		57-144			
o-Xylene	35.9	1.0	"	33.3		108		53-146			
Naphthalene	37.2	1.0	"	33.3		112		70-130			
1,2,4-Trimethylbenzene	37.0	1.0	"	33.3		111		70-130			
1,3,5-Trimethylbenzene	37.2	1.0	"	33.3		112		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.3		"	13.3		99.8		23-173			
<i>Surrogate: Toluene-d8</i>	13.1		"	13.3		98.2		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	13.0		"	13.3		97.7		21-167			

Matrix Spike (BHE0242-MS1)

Source: 2405074-01

Prepared: 05/07/24 Analyzed: 05/09/24

Benzene	31.8	1.0	ug/l	33.3	ND	95.3		34-141			
Toluene	31.1	1.0	"	33.3	ND	93.4		27-151			
Ethylbenzene	31.2	1.0	"	33.3	ND	93.7		29-160			
m,p-Xylene	61.2	2.0	"	66.7	ND	91.7		20-166			
o-Xylene	29.9	1.0	"	33.3	ND	89.6		33-159			
Naphthalene	30.8	1.0	"	33.3	ND	92.5		70-130			
1,2,4-Trimethylbenzene	30.8	1.0	"	33.3	ND	92.3		70-130			
1,3,5-Trimethylbenzene	30.9	1.0	"	33.3	ND	92.8		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.6		"	13.3		102		23-173			
<i>Surrogate: Toluene-d8</i>	13.2		"	13.3		98.9		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	13.0		"	13.3		97.5		21-167			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

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 BHE0242 - EPA 5030 Water MS

Matrix Spike Dup (BHE0242-MSD1)	Source: 2405074-01			Prepared: 05/07/24 Analyzed: 05/09/24						
Benzene	35.7	1.0	ug/l	33.3	ND	107	34-141	11.5	30	
Toluene	34.8	1.0	"	33.3	ND	104	27-151	11.2	30	
Ethylbenzene	34.8	1.0	"	33.3	ND	104	29-160	10.7	30	
m,p-Xylene	67.0	2.0	"	66.7	ND	100	20-166	9.10	30	
o-Xylene	33.5	1.0	"	33.3	ND	100	33-159	11.4	30	
Naphthalene	34.4	1.0	"	33.3	ND	103	70-130	11.1	30	
1,2,4-Trimethylbenzene	34.6	1.0	"	33.3	ND	104	70-130	11.8	30	
1,3,5-Trimethylbenzene	34.5	1.0	"	33.3	ND	104	70-130	11.0	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.9</i>		<i>"</i>	<i>13.3</i>		<i>104</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.1</i>		<i>"</i>	<i>13.3</i>		<i>98.4</i>	<i>21-167</i>			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

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 BHE0210 - EPA 5030 Water MS

Blank (BHE0210-BLK1)

Prepared & Analyzed: 05/07/24

Benzo (a) anthracene	ND	0.100	ug/l							
1-Methylnaphthalene	ND	0.500	"							
2-Methylnaphthalene	ND	0.500	"							
Surrogate: 2-Methylnaphthalene-d10	7.17		"	2.00		359	40-150			S-07
Surrogate: Fluoranthene-d10	2.11		"	2.00		106	40-150			

LCS (BHE0210-BS1)

Prepared & Analyzed: 05/07/24

Benzo (a) anthracene	1.41	0.100	ug/l	2.00		70.3	30-120			
1-Methylnaphthalene	2.01	0.500	"	2.00		101	30-120			
2-Methylnaphthalene	3.16	0.500	"	2.00		158	0-200			
Surrogate: 2-Methylnaphthalene-d10	1.87		"	2.00		93.6	40-150			
Surrogate: Fluoranthene-d10	1.42		"	2.00		71.2	40-150			

LCS Dup (BHE0210-BSD1)

Prepared & Analyzed: 05/07/24

Benzo (a) anthracene	1.67	0.100	ug/l	2.00		83.6	30-120	17.3	30	
1-Methylnaphthalene	2.27	0.500	"	2.00		113	30-120	12.0	30	
2-Methylnaphthalene	2.65	0.500	"	2.00		132	0-200	17.6	200	
Surrogate: 2-Methylnaphthalene-d10	2.18		"	2.00		109	40-150			
Surrogate: Fluoranthene-d10	1.68		"	2.00		83.9	40-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch BHE0314 - EPA 200.8

Blank (BHE0314-BLK1)

Prepared: 05/09/24 Analyzed: 05/10/24

Barium ND 1.00 ug/l

LCS (BHE0314-BS1)

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 508 1.00 ug/l 500 102 85-115

Duplicate (BHE0314-DUP1)

Source: 2405032-01

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 192 1.00 ug/l 181 6.17 20

Matrix Spike (BHE0314-MS1)

Source: 2405032-01

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 736 1.00 ug/l 500 181 111 70-130

Matrix Spike Dup (BHE0314-MSD1)

Source: 2405032-01

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 688 1.00 ug/l 500 181 101 70-130 6.72 25

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BHF0164 - General Preparation

Blank (BHF0164-BLK1)

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	ND	0.0600	mg/L						
Sulfate	ND	0.300	"						

LCS (BHF0164-BS1)

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	3.12	0.0600	mg/L	3.00	104	90-110		
Sulfate	15.2	0.300	"	15.0	101	90-110		

Duplicate (BHF0164-DUP1)

Source: 2405090-01

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	613	0.0600	mg/L		557		9.64	20
Sulfate	2480	0.300	"		2250		9.46	20

Matrix Spike (BHF0164-MS1)

Source: 2405090-01

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	1300	0.0600	mg/L	600	557	123	80-120		QM-01
Sulfate	5680	0.300	"	3000	2250	114	80-120		

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

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

Batch BHE0205 - General Preparation

Blank (BHE0205-BLK1)

Prepared & Analyzed: 05/07/24

Total Dissolved Solids ND 10.0 mg/L

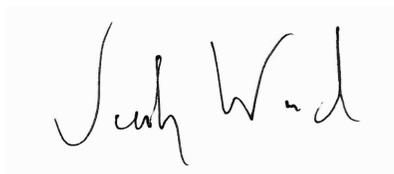
Duplicate (BHE0205-DUP1)

Source: 2405083-10

Prepared & Analyzed: 05/07/24

Total Dissolved Solids 2540 10.0 mg/L 2610 2.64 20

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/18/24 12:22

Notes and Definitions

- S-07 The surrogate recovery was outside acceptance limits indicating a potential high bias. The sample did not exhibit concentrations above reporting level for analytes represented by this surrogate. Data quality is not affected.
- QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- I-02 This sample was analyzed outside of the recommended holding time.
- 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