

**SECOND QUARTER 2022 SITE MONITORING DATA**  
**HSR CHARLTON 08-20**

COGCC SPILL TRACKING # 480746  
COGCC REMEDIATION # 19600

Prepared for:



2115 117th Avenue  
Greeley, CO 80631

Prepared by:



6855 W. 119<sup>th</sup> Ave  
Broomfield, CO 80020

**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**NOBLE ENERGY, INC. - HSR CHARLTON 08-20**

Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	10/27/21	4786.35	10.70	1.63	ND	ND	4785.04
BH01	03/08/22	4786.35	10.45	3.36	ND	ND	4783.31
BH01	06/14/22	4786.35	10.42	1.75	ND	ND	4784.92
BH02	10/27/21	4786.51	10.32	1.98	ND	ND	4784.82
BH02	03/08/22	4786.51	10.30	3.75	ND	ND	4783.05
BH02	06/14/22	4786.51	10.24	2.12	ND	ND	4784.68
BH03	10/27/21	4786.75	11.92	1.80	ND	ND	4785.36
BH03	03/08/22	4786.75	11.71	3.57	ND	ND	4783.59
BH03	06/14/22	4786.75	11.68	1.86	ND	ND	4785.30
BH04	10/27/21	4786.98	13.55	1.96	ND	ND	4785.26
BH04	03/08/22	4786.98	13.29	3.68	ND	ND	4783.54
BH04	06/14/22	4786.98	12.72	2.05	ND	ND	4785.17
BH05	10/27/21	4786.32	10.38	1.94	ND	ND	4784.57
BH05	03/08/22	4786.32	10.45	3.58	ND	ND	4782.93
BH05	06/14/22	4786.32	10.44	2.09	ND	ND	4784.42

**Notes:**

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

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

$$\text{Groundwater elevation} = (\text{TOC Elevation} - \text{Measured Depth to Water}) + (\text{LNAPL Thickness in Well} \times \text{LNAPL Relative Density})$$

LNAPL relative density was estimated to be approximately 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. - HSR CHARLTON 08-20**

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)	TDS (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
<b>COGCC Groundwater Standard<sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	<b>&lt;1.25 x Background</b>	<b>250 or &lt;1.25 x Background</b>	<b>250 or &lt;1.25 x Background</b>
GW01	09/13/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	NA
BH01	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	728	203	273
BH01	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	664	93.8	29.8
BH01	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1,920	416	467
BH02	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1,280	348	634
BH02	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	945	192	93.6
BH02	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2,220	540	644
BH03 <sup>(2)</sup>	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1,070	298	388
BH03 <sup>(2)</sup>	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1,370	292	314
BH03 <sup>(2)</sup>	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2,660	551	954
BH04	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	836	212	374
BH04	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	780	151	103
BH04	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1,230	221	306
BH05	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	816	215	365
BH05	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	640	111	57.8
BH05	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	988	161	145

**Notes:**

<sup>(1)</sup> Groundwater standards referenced from 2 CCR 404-1, Table 915-1 (January 15, 2021).

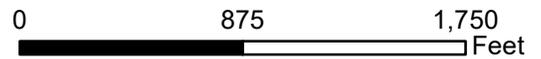
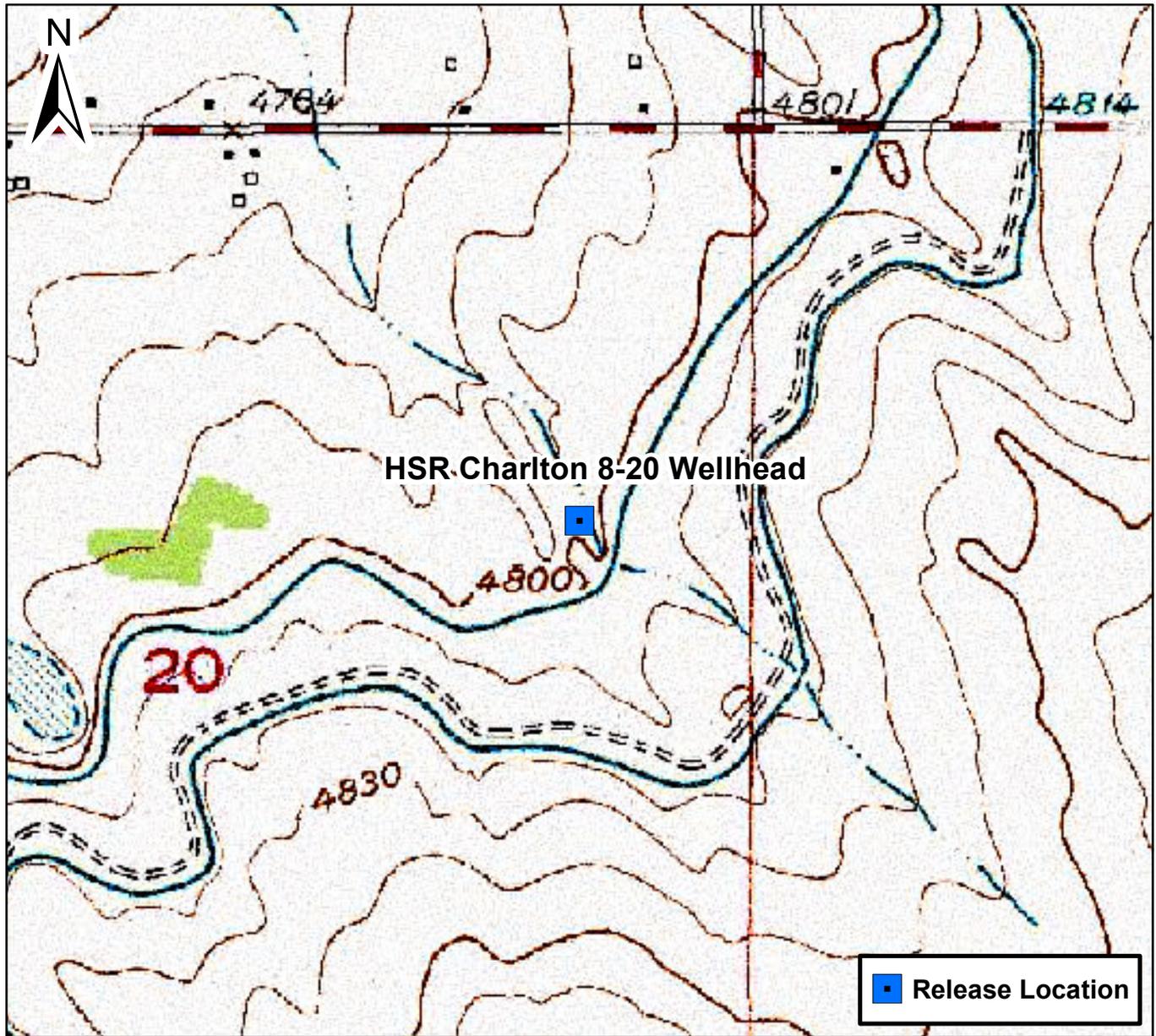
<sup>(2)</sup> Monitoring well used to determine background concentration levels

**Definitions:**

- < = Analytical result is less than the indicated laboratory reporting limit
- COGCC = Colorado Oil and Gas Conservation Commission
- µg/L = Micrograms per liter
- mg/L = Milligrams per liter
- NA = Not analyzed
- 1,2,4 - TMB = 1,2,4 Trimethylbenzene
- 1,3,5 - TMB = 1,3,5 Trimethylbenzene
- TDS = Total Dissolved Solids

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

**Bold** results exceed the COGCC Table 915-1 standard for groundwater inorganic parameters, site-specific background assessment is on-going for groundwater inorganic constituents.



### Figure 1

Site Location Map  
 HSR Charlton 8-20 Wellhead  
 SENE S20 T4N R65W  
 Weld County, Colorado





DATE:	07/20/2022
DESIGNED BY:	JW
DRAWN BY:	CA



**TASMAN**  
GEOSCIENCES

Tasman Geosciences, Inc.  
6855 W 119<sup>th</sup> Avenue  
Broomfield, CO 80020

**Noble Energy, Inc. – DJ Basin**  
HSR Charlton 08-20 Wellhead  
SENE, Section 20, Township 4 North, Range 65 West  
Weld County, Colorado

Site Overview Map

FIGURE  
2



DATE:	06/28/2022
DESIGNED BY:	JW
DRAWN BY:	JC



**TASMAN** Tasman Geosciences, Inc.  
6855 W 119<sup>th</sup> Ave.  
Broomfield, CO 80020

**Noble Energy, Inc. – DJ Basin**  
HSR Charlton 08-20 Wellhead  
SENE, Section 20, Township 4 North, Range 65 West  
Weld County, Colorado

Groundwater Potentiometric  
Surface Contour Map  
(06/14/2022)

FIGURE  
3

BH01	
Compound	06/14/22
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-Trimethylbenzene (ug/L)	<1.0
1,3,5-Trimethylbenzene (ug/L)	<1.0
Total Dissolved Solids (mg/L)	1,920
Chloride (mg/L)	416
Sulfate (mg/L)	467

BH02	
Compound	06/14/22
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-Trimethylbenzene (ug/L)	<1.0
1,3,5-Trimethylbenzene (ug/L)	<1.0
Total Dissolved Solids (mg/L)	2,220
Chloride (mg/L)	540
Sulfate (mg/L)	644

BH03	
Compound	06/14/22
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-Trimethylbenzene (ug/L)	<1.0
1,3,5-Trimethylbenzene (ug/L)	<1.0
Total Dissolved Solids (mg/L)	2,660
Chloride (mg/L)	551
Sulfate (mg/L)	954

BH05	
Compound	06/14/22
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-Trimethylbenzene (ug/L)	<1.0
1,3,5-Trimethylbenzene (ug/L)	<1.0
Total Dissolved Solids (mg/L)	988
Chloride (mg/L)	161
Sulfate (mg/L)	145

BH04	
Compound	06/14/22
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-Trimethylbenzene (ug/L)	<1.0
1,3,5-Trimethylbenzene (ug/L)	<1.0
Total Dissolved Solids (mg/L)	1,230
Chloride (mg/L)	221
Sulfate (mg/L)	306

**Legend**

-  Monitoring Well Location (Collected via Trimble GPS)
-  Excavation Extent (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 COGCC Table 915-1 not shown.
- 4) Concentration in exceedance of COGCC table 915-1 soil standards indicated in **RED**.

GPS – Global Positioning System  
 mg/kg – Milligrams per kilogram  
 ug/L – microgram per liter

Contaminant of Concern	COGCC 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-TMB – 1, 2, 4-Trimethylbenzene	67 ug/L
1,3,5-TMB – 1, 3, 5-Trimethylbenzene	67 ug/L
TDS – Total Dissolved Solids	1.25 x background
Cl – Chloride Ion	250 mg/L or 1.25 x background
SO <sub>4</sub> – Sulfate Ion	250 mg/L or 1.25 x background

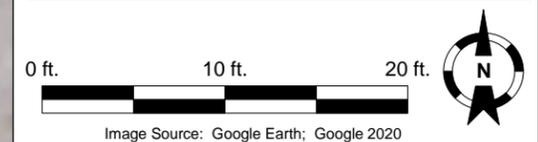


Image Source: Google Earth; Google 2020

DATE: 07/22/2022

DESIGNED BY: JW

DRAWN BY: CA



**Noble Energy, Inc. – DJ Basin**  
 HSR Charlton 08-20 Wellhead  
 SENE, Section 20, Township 4 North, Range 65 West  
 Weld County, Colorado

Groundwater Analytical Results  
 Map  
 (06/14/2022)

FIGURE  
 4

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 04, 2022

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - HSR Charlton 08-20

Work Order #2206220

Enclosed are the results of analyses for samples received by Summit Scientific on 06/14/22 17:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



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

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2206220-01	Water	06/14/22 13:01	06/14/22 17:25
BH02	2206220-02	Water	06/14/22 12:48	06/14/22 17:25
BH03	2206220-03	Water	06/14/22 12:38	06/14/22 17:25
BH04	2206220-04	Water	06/14/22 12:53	06/14/22 17:25
BH05	2206220-05	Water	06/14/22 12:39	06/14/22 17:25

Summit Scientific

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



S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2206220

Client: Nade Tasman Client Project ID: HSR Charlton 8-20

Shipped 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 <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ice
Were all samples received intact <sup>(1)</sup> ?	-			
Was adequate sample volume provided <sup>(1)</sup> ?	-			
If custody seals are present, are they intact <sup>(1)</sup> ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	-			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	-			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	-			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		-		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	-			HCl
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	

Additional Comments (if any):

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

[Signature]  
Custodian Printed Name

6/14/22  
Date/Time



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

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**BH01**  
**2206220-01 (Water)**

**Summit Scientific**

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

Date Sampled: **06/14/22 13:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFF0420	06/15/22	06/17/22	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: **06/14/22 13:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		55.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		89.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.6 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **06/14/22 13:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	416	12.0		mg/L	200	BFF0482	06/17/22	06/17/22	EPA 300.0	
Sulfate	467	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **06/14/22 13:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>1920</b>	10.0		mg/L	1	BFF0417	06/15/22	06/15/22	SM2540C	

Summit Scientific

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



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

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**BH02**  
**2206220-02 (Water)**

**Summit Scientific**

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

Date Sampled: **06/14/22 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFF0420	06/15/22	06/17/22	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: **06/14/22 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		55.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		88.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.2 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **06/14/22 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>540</b>	12.0		mg/L	200	BFF0482	06/17/22	06/17/22	EPA 300.0	
Sulfate	<b>644</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **06/14/22 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>2220</b>	10.0		mg/L	1	BFF0417	06/15/22	06/15/22	SM2540C	

Summit Scientific

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

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**BH03**  
**2206220-03 (Water)**

**Summit Scientific**

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

Date Sampled: **06/14/22 12:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFF0420	06/15/22	06/17/22	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: **06/14/22 12:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		56.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		90.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.5 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **06/14/22 12:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>551</b>	12.0		mg/L	200	BFF0482	06/17/22	06/17/22	EPA 300.0	
Sulfate	<b>954</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **06/14/22 12:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>2660</b>	10.0		mg/L	1	BFF0417	06/15/22	06/15/22	SM2540C	

Summit Scientific

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

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**BH04**  
**2206220-04 (Water)**

**Summit Scientific**

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

Date Sampled: **06/14/22 12:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFF0420	06/15/22	06/17/22	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: **06/14/22 12:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		55.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		90.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.4 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **06/14/22 12:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>221</b>	12.0		mg/L	200	BFF0482	06/17/22	06/17/22	EPA 300.0	
Sulfate	<b>306</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **06/14/22 12:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>1230</b>	10.0		mg/L	1	BFF0417	06/15/22	06/15/22	SM2540C	

Summit Scientific

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

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**BH05**  
**2206220-05 (Water)**

**Summit Scientific**

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

Date Sampled: **06/14/22 12:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFF0420	06/15/22	06/17/22	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: **06/14/22 12:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		55.3 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		89.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.9 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **06/14/22 12:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>161</b>	12.0		mg/L	200	BFF0482	06/17/22	06/17/22	EPA 300.0	
Sulfate	<b>145</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **06/14/22 12:39**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>988</b>	10.0		mg/L	1	BFF0417	06/15/22	06/15/22	SM2540C	

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Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

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

#### Summit Scientific

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

#### Batch BFF0420 - EPA 5030 Water MS

##### Blank (BFF0420-BLK1)

Prepared: 06/15/22 Analyzed: 06/16/22

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>	6.46		"	13.3		48.5	23-173			
<i>Surrogate: Toluene-d8</i>	11.8		"	13.3		88.7	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	12.5		"	13.3		94.0	21-167			

##### LCS (BFF0420-BS1)

Prepared: 06/15/22 Analyzed: 06/16/22

Benzene	24.0	1.0	ug/l	33.3		72.0	51-132			
Toluene	27.8	1.0	"	33.3		83.6	51-138			
Ethylbenzene	32.3	1.0	"	33.3		97.0	58-146			
m,p-Xylene	70.9	2.0	"	66.7		106	57-144			
o-Xylene	36.1	1.0	"	33.3		108	53-146			
Naphthalene	25.0	1.0	"	33.3		74.9	70-130			
1,2,4-Trimethylbenzene	38.3	1.0	"	33.3		115	70-130			
1,3,5-Trimethylbenzene	37.6	1.0	"	33.3		113	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	7.97		"	13.3		59.8	23-173			
<i>Surrogate: Toluene-d8</i>	12.2		"	13.3		91.2	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	12.1		"	13.3		90.7	21-167			

##### Matrix Spike (BFF0420-MS1)

Source: 2206203-01

Prepared: 06/15/22 Analyzed: 06/16/22

Benzene	24.6	1.0	ug/l	33.3	ND	73.8	34-141			
Toluene	28.6	1.0	"	33.3	ND	85.8	27-151			
Ethylbenzene	34.9	1.0	"	33.3	ND	105	29-160			
m,p-Xylene	74.8	2.0	"	66.7	ND	112	20-166			
o-Xylene	37.3	1.0	"	33.3	ND	112	33-159			
Naphthalene	29.0	1.0	"	33.3	ND	87.1	70-130			
1,2,4-Trimethylbenzene	40.6	1.0	"	33.3	ND	122	70-130			
1,3,5-Trimethylbenzene	39.4	1.0	"	33.3	ND	118	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	9.81		"	13.3		73.6	23-173			
<i>Surrogate: Toluene-d8</i>	12.1		"	13.3		90.5	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	12.5		"	13.3		94.1	21-167			

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6855 W. 119th Ave.  
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Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**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 BFF0420 - EPA 5030 Water MS**

Matrix Spike Dup (BFF0420-MSD1)	Source: 2206203-01			Prepared: 06/15/22 Analyzed: 06/16/22					
Benzene	24.1	1.0	ug/l	33.3	ND	72.2	34-141	2.10	30
Toluene	28.4	1.0	"	33.3	ND	85.2	27-151	0.667	30
Ethylbenzene	35.2	1.0	"	33.3	ND	106	29-160	0.969	30
m,p-Xylene	75.9	2.0	"	66.7	ND	114	20-166	1.46	30
o-Xylene	37.4	1.0	"	33.3	ND	112	33-159	0.214	30
Naphthalene	29.6	1.0	"	33.3	ND	88.8	70-130	1.98	30
1,2,4-Trimethylbenzene	41.3	1.0	"	33.3	ND	124	70-130	1.59	30
1,3,5-Trimethylbenzene	40.1	1.0	"	33.3	ND	120	70-130	1.73	30
Surrogate: 1,2-Dichloroethane-d4	8.58		"	13.3		64.4	23-173		
Surrogate: Toluene-d8	12.1		"	13.3		90.7	20-170		
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.3	21-167		

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Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**Anions by EPA Method 300.0 - Quality Control**  
**Summit Scientific**

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

**Batch BFF0482 - General Preparation**

**Blank (BFF0482-BLK1)**

Prepared & Analyzed: 06/17/22

Chloride	ND	0.0600	mg/L						
Sulfate	ND	0.300	"						

**LCS (BFF0482-BS1)**

Prepared & Analyzed: 06/17/22

Chloride	3.04	0.0600	mg/L	3.00	101	90-110		
Sulfate	14.2	0.300	"	15.0	94.9	90-110		

**Duplicate (BFF0482-DUP1)**

Source: 2206220-01

Prepared & Analyzed: 06/17/22

Chloride	400	12.0	mg/L		416		4.07	20
Sulfate	554	60.0	"		467		17.1	20

**Matrix Spike (BFF0482-MS1)**

Source: 2206220-01

Prepared & Analyzed: 06/17/22

Chloride	1020	12.0	mg/L	600	416	101	80-120	
Sulfate	3420	60.0	"	3000	467	98.3	80-120	

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Broomfield CO, 80020

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

**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 BFF0417 - General Preparation**

**Blank (BFF0417-BLK1)**

Prepared & Analyzed: 06/15/22

Total Dissolved Solids                      ND                      10.0                      mg/L

**Duplicate (BFF0417-DUP1)**

**Source: 2206196-01**

Prepared & Analyzed: 06/15/22

Total Dissolved Solids                      13300                      10.0                      mg/L                      14000                      5.20                      20

Summit Scientific

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Charlton 08-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/04/22 08:37

### Notes and Definitions

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