

**THIRD 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. 119th 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
BH01	09/23/22	Not Sampled - Well Covered by Equipment					
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
BH02	09/23/22	4786.51	10.17	1.95	ND	ND	4784.85
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
BH03	09/23/22	4786.75	11.58	1.77	ND	ND	4785.39
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
BH04	09/23/22	4786.98	12.45	1.98	ND	ND	4785.24
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
BH05	09/23/22	4786.32	10.52	1.94	ND	ND	4784.57

**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:

Groundwater elevation = (TOC Elevation - Measured Depth to Water)+(LNAPL Thickness in Well x 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)	1-M (µg/L)	2-M (µg/L)	TDS (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
COGCC Groundwater Standard <sup>(1)</sup>		5	560	700	1,400	140	67	67	No Standard	No Standard	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background
GW01	09/13/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
BH01	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	728	203	273
BH01	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	664	93.8	29.8
BH01	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	1,920	416	467
BH01	09/23/22	Not Sampled - Well Covered by Equipment											
BH02	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	1,280	348	634
BH02	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	945	192	93.6
BH02	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	2,220	540	644
BH02	09/23/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	<0.500	1,080	374	641
BH03 <sup>(2)</sup>	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	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	NA	NA	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	NA	NA	2,660	551	954
BH03 <sup>(2)</sup>	09/23/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	<0.500	688	189	280
BH04	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	836	212	374
BH04	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	780	151	103
BH04	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	1,230	221	306
BH04	09/23/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	<0.500	518	168	216
BH05	10/27/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	816	215	365
BH05	03/08/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	640	111	57.8
BH05	06/14/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA	988	161	145
BH05	09/23/22	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	<0.500	868	187	203

**Notes:**

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

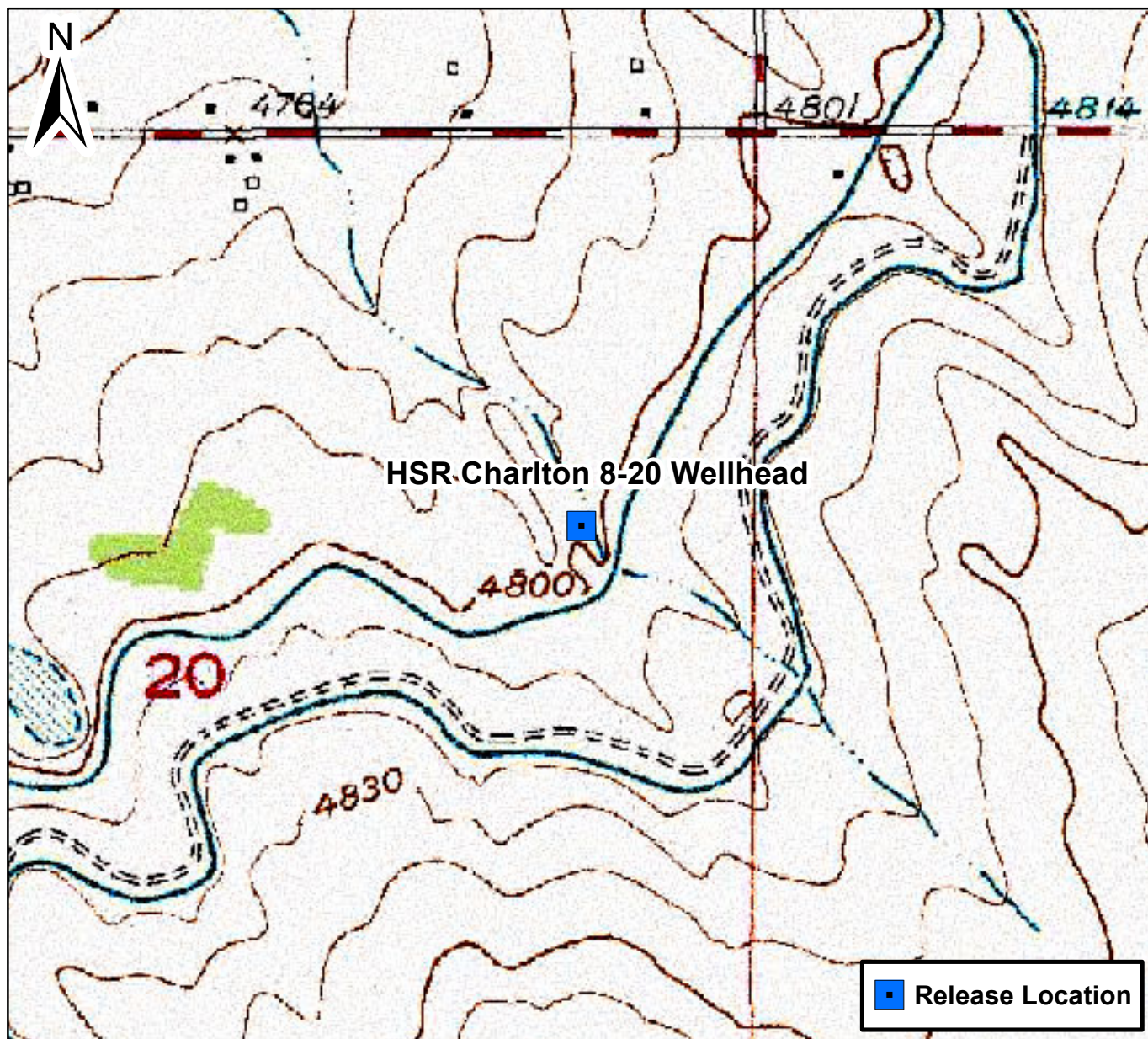
<sup>(2)</sup> Monitoring well used to determine background concentration levels

**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  
1-M = 1-Methylnaphthalene  
2-M = 2-Methylnaphthalene  
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.



0 875 1,750 Feet

## 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:	10/25/2022	 <b>TASMAN</b> Tasman Geosciences, Inc. 6855 W 119 <sup>th</sup> Ave. Broomfield, CO 80020	<b>Noble Energy, Inc. – DJ Basin</b> HSR Charlton 08-20 Wellhead SENE, Section 20, Township 4 North, Range 65 West Weld County, Colorado	Groundwater Potentiometric Surface Contour Map (09/232022)	FIGURE 3
DESIGNED BY:	JW				
DRAWN BY:	JC				



# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 03, 2022

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - HSR Charlton 08-20 WH

Work Order #2209479

Enclosed are the results of analyses for samples received by Summit Scientific on 09/23/22 17:16. 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 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02	2209479-01	Water	09/23/22 13:06	09/23/22 17:16
BH03	2209479-02	Water	09/23/22 13:03	09/23/22 17:16
BH04	2209479-03	Water	09/23/22 12:47	09/23/22 17:16
BH05	2209479-04	Water	09/23/22 12:45	09/23/22 17:16

Summit Scientific

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

# Summit Scientific

2209479

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Noble / Tasman Geoscience

Project Manager: Jake Whritenour

Address: 6855 W. 119th Ave.

E-Mail: jwhritenour@tasman-geo.com

City/State/Zip: Broomfield / CO / 80020

Phone: 303-487-1228

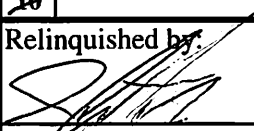
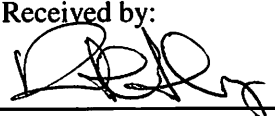
Project Name: HSR Charlton 08-20 wellhead

Sampler Name: Patrick Kline

Project Number: N/A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Naphthalene	1,2,4-TMB	1,3,5-TMB	TDS	Chloride	Sulfate	1-MN, 2-MN	
1	BH02	9/23/22	1306	5	3		2		X				X	X	X	X	X	X	X		
2	BH03		1303	1	1		1		1				1	1	1	1	1	1	1		
3	BH04		1247	1	1		1		1				1	1	1	1	1	1	1		
4	BH05		1245	1	1		1		1				1	1	1	1	1	1	1		
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: 	Date/Time: 9/23/22 1715	Received by: Tasman's Lock Box	Date/Time: 9/23/22 1715	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ <b>Sample Integrity:</b> Temperature Upon Receipt: 48 Samples Intact: <input checked="" type="checkbox"/> Yes No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 9/23/22 1716	Received by: 	Date/Time: 9/23/22 1716		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2209479Client: Noble Tasman Client Project ID: HSR Charlton 08-20 wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: \_\_\_\_\_

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

Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☒ Other ☐Temp (°C) 48 Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? <sup>(1)</sup> <b>NOTE:</b> 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? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? <sup>(1)</sup> Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Additional Comments (if any):</u>				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Custodian Printed Name

Date/Time





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

Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH02**  
**2209479-01 (Water)**

**Summit Scientific**

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

Date Sampled: **09/23/22 13:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BF10710	09/27/22	09/30/22	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: **09/23/22 13:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		67.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.7 %		21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/23/22 13:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
1-Methylnaphthalene	ND	0.500		ug/l	1	BF10642	09/26/22	09/27/22	EPA 8270D SIM	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **09/23/22 13:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10		98.5 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		91.8 %		40-150		"	"	"	"	

**Anions by EPA Method 300.0**

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 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH02**  
**2209479-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **09/23/22 13:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>374</b>	12.0		mg/L	200	BF10727	09/28/22	09/30/22	EPA 300.0	
Sulfate	<b>641</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **09/23/22 13:06**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>1080</b>	10.0		mg/L	1	BF10721	09/28/22	09/28/22	SM2540C	

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

Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH03**  
**2209479-02 (Water)**

**Summit Scientific**

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

Date Sampled: **09/23/22 13:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BF10710	09/27/22	09/30/22	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: **09/23/22 13:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		85.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.5 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/23/22 13:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
1-Methylnaphthalene	ND	0.500	ug/l	1	BF10642	09/26/22	09/27/22	EPA 8270D SIM	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **09/23/22 13:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		109 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		96.2 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Summit Scientific

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

Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH03**  
**2209479-02 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **09/23/22 13:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Chloride</b>	<b>189</b>	12.0		mg/L	200	BF10727	09/28/22	09/30/22	EPA 300.0	
<b>Sulfate</b>	<b>280</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **09/23/22 13:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>688</b>	10.0		mg/L	1	BF10721	09/28/22	09/28/22	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 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH04**  
**2209479-03 (Water)**

**Summit Scientific**

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

Date Sampled: **09/23/22 12:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BF10710	09/27/22	09/30/22	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: **09/23/22 12:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		77.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		111 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.3 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/23/22 12:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
1-Methylnaphthalene	ND	0.500	ug/l	1	BF10642	09/26/22	09/27/22	EPA 8270D SIM	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **09/23/22 12:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		109 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		93.9 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

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

Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH04**  
**2209479-03 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **09/23/22 12:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>168</b>	12.0		mg/L	200	BF10727	09/28/22	09/30/22	EPA 300.0	
Sulfate	<b>216</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **09/23/22 12:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>518</b>	10.0		mg/L	1	BF10721	09/28/22	09/28/22	SM2540C	

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Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH05**  
**2209479-04 (Water)**

**Summit Scientific**

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

Date Sampled: **09/23/22 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BF10710	09/27/22	09/30/22	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: **09/23/22 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		82.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.7 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/23/22 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
1-Methylnaphthalene	ND	0.500	ug/l	1	BF10642	09/26/22	09/27/22	EPA 8270D SIM	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **09/23/22 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		103 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		95.7 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

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Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**BH05**  
**2209479-04 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **09/23/22 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Chloride</b>	<b>187</b>	12.0		mg/L	200	BF10727	09/28/22	09/30/22	EPA 300.0	
<b>Sulfate</b>	<b>203</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **09/23/22 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>868</b>	10.0		mg/L	1	BF10721	09/28/22	09/28/22	SM2540C	

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Project Number: [none]  
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## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

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

#### Batch BF10710 - EPA 5030 Water MS

##### Blank (BF10710-BLK1)

Prepared: 09/27/22 Analyzed: 09/29/22

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	"							
Surrogate: 1,2-Dichloroethane-d4	11.6		"	13.3		86.9	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		95.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.4	21-167			

##### LCS (BF10710-BS1)

Prepared: 09/27/22 Analyzed: 09/29/22

Benzene	33.5	1.0	ug/l	33.3		100	51-132			
Toluene	38.6	1.0	"	33.3		116	51-138			
Ethylbenzene	43.9	1.0	"	33.3		132	58-146			
m,p-Xylene	89.2	2.0	"	66.7		134	57-144			
o-Xylene	42.8	1.0	"	33.3		128	53-146			
Naphthalene	35.0	1.0	"	33.3		105	70-130			
1,2,4-Trimethylbenzene	36.3	1.0	"	33.3		109	70-130			
1,3,5-Trimethylbenzene	35.9	1.0	"	33.3		108	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.0		"	13.3		90.3	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.3	21-167			

##### Matrix Spike (BF10710-MS1)

Source: 2209478-01

Prepared: 09/27/22 Analyzed: 09/29/22

Benzene	33.1	1.0	ug/l	33.3	ND	99.2	34-141			
Toluene	44.8	1.0	"	33.3	ND	134	27-151			
Ethylbenzene	45.0	1.0	"	33.3	ND	135	29-160			
m,p-Xylene	90.0	2.0	"	66.7	ND	135	20-166			
o-Xylene	43.8	1.0	"	33.3	ND	131	33-159			
Naphthalene	40.7	1.0	"	33.3	ND	122	70-130			
1,2,4-Trimethylbenzene	35.5	1.0	"	33.3	ND	106	70-130			
1,3,5-Trimethylbenzene	36.0	1.0	"	33.3	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	11.1		"	13.3		83.4	23-173			
Surrogate: Toluene-d8	14.9		"	13.3		112	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.7	21-167			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]

Project Manager: Jacob Whritenour

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10/03/22 14:47

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

### Summit Scientific

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

#### Batch BFI0710 - EPA 5030 Water MS

##### Matrix Spike Dup (BFI0710-MSD1)

Source: 2209478-01

Prepared: 09/27/22 Analyzed: 09/30/22

Benzene	29.1	1.0	ug/l	33.3	ND	87.4	34-141	12.6	30	
Toluene	38.9	1.0	"	33.3	ND	117	27-151	14.2	30	
Ethylbenzene	44.5	1.0	"	33.3	ND	133	29-160	1.12	30	
m,p-Xylene	89.9	2.0	"	66.7	ND	135	20-166	0.122	30	
o-Xylene	44.0	1.0	"	33.3	ND	132	33-159	0.410	30	
Naphthalene	40.0	1.0	"	33.3	ND	120	70-130	1.91	30	
1,2,4-Trimethylbenzene	35.9	1.0	"	33.3	ND	108	70-130	1.18	30	
1,3,5-Trimethylbenzene	35.9	1.0	"	33.3	ND	108	70-130	0.250	30	
Surrogate: 1,2-Dichloroethane-d4	10.1		"	13.3		76.0	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	11.9		"	13.3		89.5	21-167			

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Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

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

### Summit Scientific

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

#### Batch BFI0642 - EPA 5030 Water MS

##### Blank (BFI0642-BLK1)

Prepared & Analyzed: 09/26/22

Acenaphthene	ND	0.500	ug/l							
Acenaphthylene	ND	0.200	"							
Anthracene	ND	0.200	"							
Benzo (a) anthracene	ND	0.100	"							
Benzo (b) fluoranthene	ND	0.200	"							
Benzo (k) fluoranthene	ND	0.200	"							
Benzo (g,h,i) perylene	ND	0.200	"							
Benzo (a) pyrene	ND	0.200	"							
Chrysene	ND	0.200	"							
Dibenz (a,h) anthracene	ND	0.200	"							
Fluoranthene	ND	2.00	"							
Fluorene	ND	0.200	"							
Indeno (1,2,3-cd) pyrene	ND	0.300	"							
Phenanthrene	ND	0.500	"							
Pyrene	ND	1.00	"							
1-Methylnaphthalene	ND	0.500	"							
2-Methylnaphthalene	ND	0.500	"							
Surrogate: 2-Methylnaphthalene-d10	1.85		"	2.00		92.3	40-150			
Surrogate: Fluoranthene-d10	2.01		"	2.00		100	40-150			

##### LCS (BFI0642-BS1)

Prepared: 09/26/22 Analyzed: 09/27/22

Acenaphthene	2.24	0.500	ug/l	2.00		112	30-120			
Acenaphthylene	2.16	0.200	"	2.00		108	30-120			
Anthracene	1.98	0.200	"	2.00		99.2	30-120			
Benzo (a) anthracene	1.94	0.100	"	2.00		96.8	30-120			
Benzo (b) fluoranthene	2.31	0.200	"	2.00		115	30-120			
Benzo (k) fluoranthene	2.15	0.200	"	2.00		108	30-120			
Benzo (g,h,i) perylene	2.22	0.200	"	2.00		111	30-120			
Benzo (a) pyrene	2.16	0.200	"	2.00		108	30-120			
Chrysene	1.52	0.200	"	2.00		76.1	30-120			
Dibenz (a,h) anthracene	2.03	0.200	"	2.00		101	30-120			
Fluoranthene	2.18	2.00	"	2.00		109	30-120			
Fluorene	1.65	0.200	"	2.00		82.3	30-120			
Indeno (1,2,3-cd) pyrene	2.25	0.300	"	2.00		113	30-120			
Phenanthrene	2.24	0.500	"	2.00		112	30-120			
Pyrene	1.80	1.00	"	2.00		90.0	30-120			
1-Methylnaphthalene	1.99	0.500	"	2.00		99.3	30-120			
2-Methylnaphthalene	2.04	0.500	"	2.00		102	0-200			

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Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

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

### Summit Scientific

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

#### Batch BFI0642 - EPA 5030 Water MS

##### LCS (BFI0642-BS1)

Prepared: 09/26/22 Analyzed: 09/27/22

Surrogate: 2-Methylnaphthalene-d10	2.08		ug/l	2.00		104		40-150			
Surrogate: Fluoranthene-d10	2.03		"	2.00		101		40-150			

##### LCS Dup (BFI0642-BSD1)

Prepared: 09/26/22 Analyzed: 09/27/22

Acenaphthene	1.99	0.500	ug/l	2.00		99.3	30-120	11.8	30		
Acenaphthylene	1.98	0.200	"	2.00		99.0	30-120	8.66	30		
Anthracene	2.07	0.200	"	2.00		104	30-120	4.34	30		
Benzo (a) anthracene	1.91	0.100	"	2.00		95.7	30-120	1.05	30		
Benzo (b) fluoranthene	2.36	0.200	"	2.00		118	30-120	2.23	30		
Benzo (k) fluoranthene	2.23	0.200	"	2.00		112	30-120	3.55	30		
Benzo (g,h,i) perylene	2.15	0.200	"	2.00		107	30-120	3.42	30		
Benzo (a) pyrene	2.16	0.200	"	2.00		108	30-120	0.139	30		
Chrysene	1.51	0.200	"	2.00		75.6	30-120	0.666	30		
Dibenz (a,h) anthracene	1.97	0.200	"	2.00		98.4	30-120	2.86	30		
Fluoranthene	2.22	2.00	"	2.00		111	30-120	2.02	30		
Fluorene	1.82	0.200	"	2.00		91.1	30-120	10.1	30		
Indeno (1,2,3-cd) pyrene	2.17	0.300	"	2.00		108	30-120	3.73	30		
Phenanthrene	2.32	0.500	"	2.00		116	30-120	3.45	30		
Pyrene	1.98	1.00	"	2.00		99.1	30-120	9.54	30		
1-Methylnaphthalene	2.11	0.500	"	2.00		106	30-120	6.03	30		
2-Methylnaphthalene	2.05	0.500	"	2.00		102	0-200	0.272	200		
Surrogate: 2-Methylnaphthalene-d10	2.22		"	2.00		111		40-150			
Surrogate: Fluoranthene-d10	1.91		"	2.00		95.7		40-150			

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

Project Number: [none]  
Project Manager: Jacob Whritenour

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10/03/22 14:47

### Anions by EPA Method 300.0 - Quality Control

#### Summit Scientific

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

#### Batch BFI0727 - General Preparation

##### Blank (BFI0727-BLK1)

Prepared: 09/28/22 Analyzed: 09/29/22

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

##### LCS (BFI0727-BS1)

Prepared: 09/28/22 Analyzed: 09/29/22

Chloride	3.17	0.0600	mg/L	3.00	106	90-110
Sulfate	16.0	0.300	"	15.0	107	90-110

##### Duplicate (BFI0727-DUP1)

Source: 2209478-01

Prepared: 09/28/22 Analyzed: 09/29/22

Chloride	149	12.0	mg/L	146	2.58	20
Sulfate	219	60.0	"	211	3.90	20

##### Matrix Spike (BFI0727-MS1)

Source: 2209478-01

Prepared: 09/28/22 Analyzed: 09/29/22

Chloride	740	12.0	mg/L	600	146	99.0	80-120
Sulfate	3090	60.0	"	3000	211	96.1	80-120

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Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch BFI0721 - General Preparation**

**Blank (BFI0721-BLK1)**

Prepared & Analyzed: 09/28/22

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BFI0721-DUP1)**

Source: 2209478-01

Prepared & Analyzed: 09/28/22

Total Dissolved Solids 635 10.0 mg/L 620 2.25 20

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Project: Noble - HSR Charlton 08-20 WH

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
10/03/22 14:47

### 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