

FIRST QUARTER 2021 SITE MONITORING DATA

DUNCAN D20-12, 20-13

COGCC SPILL TRACKING # 459804
COGCC REMEDIATION # 12461

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 West 119th Avenue
Broomfield, Colorado 80020

TABLES

TABLE 1
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - DUNCAN D20-12, 20-13



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	02/05/20	4772.46	21.47	5.38	ND	ND	4765.11
BH01	05/04/20	4772.46	21.21	3.15	ND	ND	4767.34
BH01	08/05/20	4772.46	21.14	5.84	ND	ND	4764.65
BH01	11/25/20	4772.46	20.85	6.07	ND	ND	4764.42
BH01	02/24/21	4772.46	19.87	6.33	ND	ND	4764.16
BH02	02/05/20	4773.47	17.20	5.58	ND	ND	4765.03
BH02	05/04/20	4773.47	17.17	3.33	ND	ND	4767.28
BH02	08/05/20	4773.47	17.16	6.05	ND	ND	4764.56
BH02	11/25/20	4773.47	17.15	6.29	ND	ND	4764.32
BH02	02/24/21	4773.47	17.13	6.49	ND	ND	4764.12
BH03	02/05/20	4770.68	13.94	5.94	ND	ND	4765.15
BH03	05/04/20	4770.68	13.87	3.67	ND	ND	4767.42
BH03	08/05/20	4770.68	13.74	6.38	ND	ND	4764.71
BH03	11/25/20	4770.68	13.73	6.62	ND	ND	4764.47
BH03	02/24/21	4770.68	13.60	6.85	ND	ND	4764.24
BH04	02/05/20	4773.76	20.42	5.69	ND	ND	4765.13
BH04	05/04/20	4773.76	19.72	3.44	ND	ND	4767.38
BH04	08/05/20	4773.76	19.75	6.21	ND	ND	4764.61
BH04	11/25/20	4773.76	19.74	6.49	ND	ND	4764.33
BH04	02/24/21	4773.76	19.97	6.70	ND	ND	4764.12
BH05	02/05/20	4772.36	19.40	5.61	ND	ND	4765.07
BH05	05/04/20	4772.36	19.23	3.36	ND	ND	4767.32
BH05	08/05/20	4772.36	19.05	6.07	ND	ND	4764.61
BH05	11/25/20	4772.36	18.95	6.29	ND	ND	4764.39
BH05	02/24/21	4772.36	18.85	6.53	ND	ND	4764.15
BH06	02/05/20	4772.64	16.52	5.55	ND	ND	4765.16
BH06	05/04/20	4772.64	16.60	3.32	ND	ND	4767.39
BH06	08/05/20	4772.64	16.58	6.07	ND	ND	4764.64
BH06	11/25/20	4772.64	16.55	6.28	ND	ND	4764.43
BH06	02/24/21	4772.64	16.55	6.48	ND	ND	4764.23
BH07	02/05/20	4772.12	16.01	5.03	ND	ND	4765.00
BH07	05/04/20	4772.12	16.09	2.77	ND	ND	4767.26
BH07	08/05/20	4772.12	16.08	5.53	ND	ND	4764.50
BH07	11/25/20	4772.12	16.61	5.80	ND	ND	4764.23
BH07	02/24/21	4772.12	16.04	6.01	ND	ND	4764.02
BH08	02/05/20	4770.79	12.65	6.00	ND	ND	4764.86
BH08	05/04/20	4770.79	12.66	3.78	ND	ND	4767.08
BH08	08/05/20	4770.79	12.60	6.48	ND	ND	4764.38
BH08	11/25/20	4770.79	12.61	6.75	ND	ND	4764.11
BH08	02/24/21	4770.79	12.66	6.97	ND	ND	4763.89

TABLE 1
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - DUNCAN D20-12, 20-13



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)
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Notes:

⁽¹⁾ Groundwater elevation data collected prior to January 2020 can be referenced in *Duncan D20-12, 20-13 Fourth Quarter 2021 Site Monitoring Data* (COGCC Document # : 402616302)

⁽²⁾ 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. - DUNCAN D20-12, 20-13

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)
COGCC Groundwater Standard ⁽¹⁾		5	560	700	1,400	140	67	67	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background
BH01	02/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH01	05/04/20	1,100	<1.0	200	1,400	NA	NA	NA	NA	NA	NA
BH01	08/05/20	850	<1.0	800	1,700	NA	NA	NA	NA	NA	NA
BH01	11/25/20	700	<1.0	650	1,200	NA	NA	NA	NA	NA	NA
BH01	02/24/21	560	<1.0	650	1,400	330	780	1.4	2,620	731	1,070
BH02	02/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH02	05/04/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH02	08/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH02	11/25/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH02	02/24/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2,610	563	2,270
BH03	02/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH03	05/04/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH03	08/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH03	11/25/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH03	02/24/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2,470	507	2,070
BH04	02/05/20	<1.0	<1.0	25	79	NA	NA	NA	NA	NA	NA
BH04	05/04/20	1.1	<1.0	5.9	14	NA	NA	NA	NA	NA	NA
BH04	08/05/20	1.2	<1.0	14	50	NA	NA	NA	NA	NA	NA
BH04	11/25/20	<1.0	<1.0	7.3	12	NA	NA	NA	NA	NA	NA
BH04	02/24/21	<1.0	<1.0	<1.0	12	5.8	14	1.1	2,790	668	2,510
BH05	02/05/20	240	<1.0	450	1,100	NA	NA	NA	NA	NA	NA
BH05	05/04/20	380	<1.0	190	480	NA	NA	NA	NA	NA	NA
BH05	08/05/20	610	<1.0	740	1,900	NA	NA	NA	NA	NA	NA
BH05	11/25/20	320	<1.0	430	990	NA	NA	NA	NA	NA	NA
BH05	02/24/21	280	<1.0	630	1,400	300	570	1.6	2,530	592	1,260
BH06	02/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH06	05/04/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH06	08/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH06	11/25/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH06	02/24/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3,160	827	2,770
BH07	02/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH07	05/04/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH07	08/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH07	11/25/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH07	02/24/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3,490	1,150	2,680
BH08	02/05/20	<1.0	<1.0	<1.0	2.5	NA	NA	NA	NA	NA	NA
BH08	05/04/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH08	08/05/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH08	11/25/20	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	NA
BH08	02/24/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3,110	764	2,600

TABLE 2
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - DUNCAN D20-12, 20-13

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)
COGCC Groundwater Standard ⁽¹⁾		5	560	700	1,400	140	67	67	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background

Notes:

- ⁽¹⁾ Groundwater standards referenced from 2 CCR 404-1, Table 915-1 (January 15, 2021).
⁽²⁾ Groundwater analytical data received prior to January 2020 can be referenced in *Duncan D20-12, 20-13 Fourth Quarter 2020 Site Monitoring Data* (COGCC Document # : 402616302)
3.) BH03 used as background well location

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

FIGURES

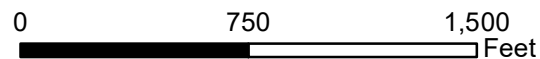
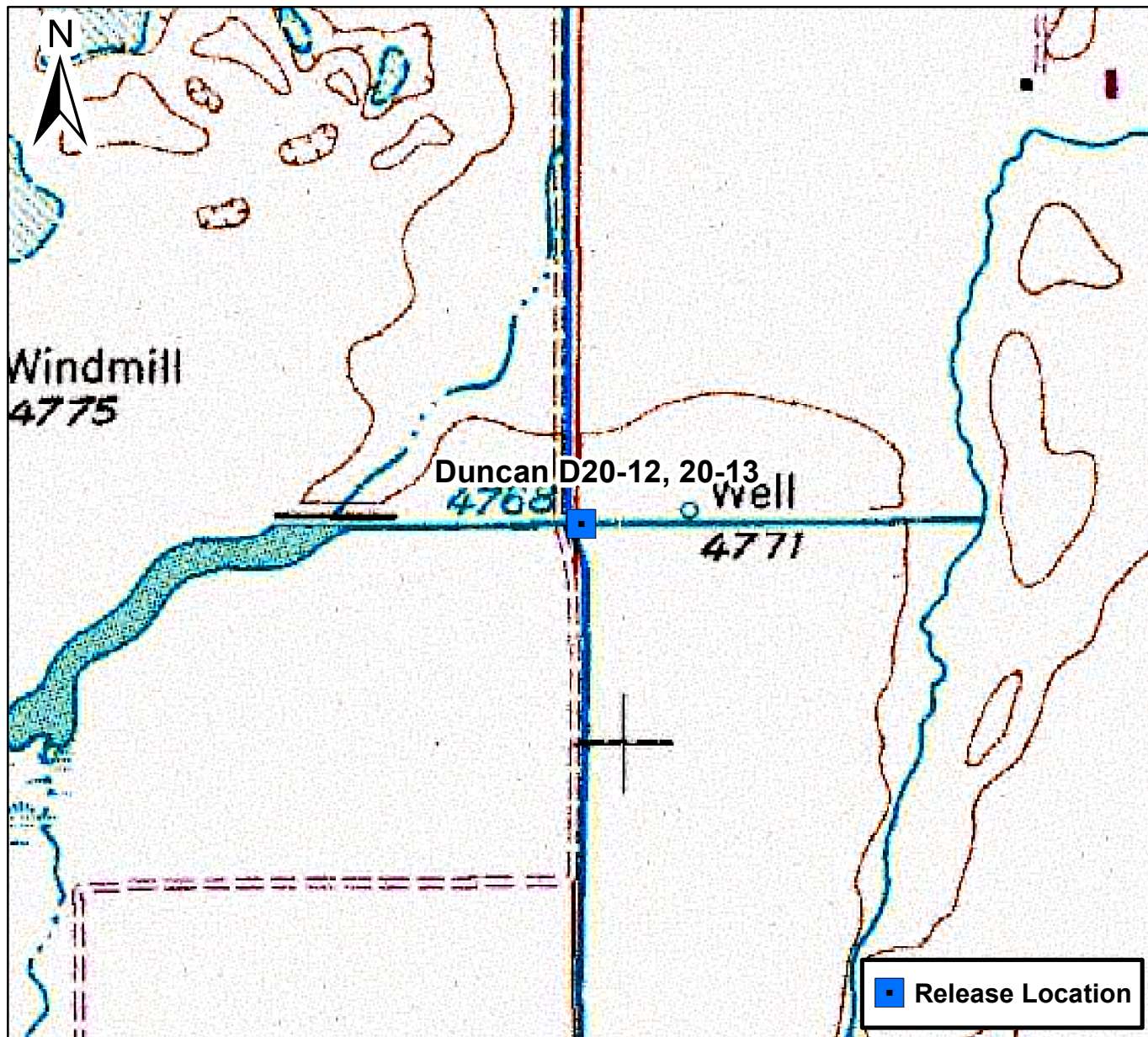


Figure 1

Site Location Map
 Duncan D20-12, 20-13
 NWSW S20 T3N R64W
 Weld County, Colorado





Legend

- Excavation Extent – June 2019 (Collected via Trimble GPS)
- Excavation Extent – Dec. 2018 (Collected via Trimble GPS)
- - - DCP Line (Collected via Trimble GPS)
- Overhead Power Line (Collected via Trimble GPS)
- + + + Property Fence (Collected via Trimble GPS)
- X Release Location
- Monitoring Well Location (Collected via Trimble GPS)

Notes

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

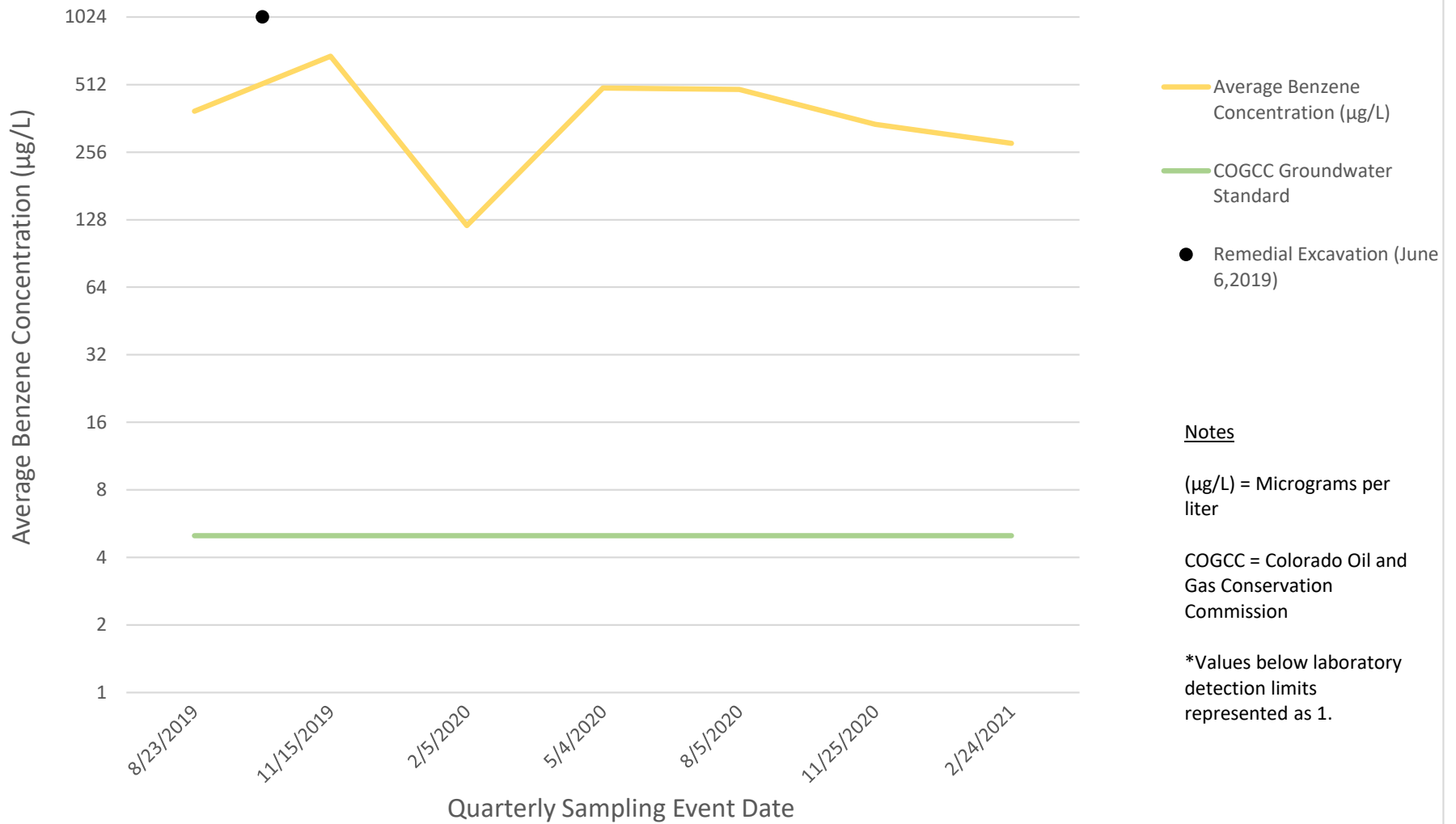
GPS – Global Positioning System

0 ft. 20 ft. 40 ft.

Image Source: Google Earth; Google 2016



Figure 5
Duncan D20-12, 20-13
Average Quarterly Benzene Concentrations



ATTACHMENT A

LABORATORY ANALYTICAL DATA REPORT

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 03, 2021

Brandon Bruns

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Duncan D20-12, 20-13

Work Order #2102339

Enclosed are the results of analyses for samples received by Summit Scientific on 02/24/21 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury
President



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

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2102339-01	Water	02/24/21 13:56	02/24/21 17:40
BH02	2102339-02	Water	02/24/21 13:41	02/24/21 17:40
BH03	2102339-03	Water	02/24/21 13:31	02/24/21 17:40
BH04	2102339-04	Water	02/24/21 13:24	02/24/21 17:40
BH05	2102339-05	Water	02/24/21 13:49	02/24/21 17:40
BH06	2102339-06	Water	02/24/21 13:17	02/24/21 17:40
BH07	2102339-07	Water	02/24/21 13:10	02/24/21 17:40
BH08	2102339-08	Water	02/24/21 12:59	02/24/21 17:40

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

S₂

2102339

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Noble / Tasman

Project Manager: Brandon Bruns, Invoice: Jacob Evans

Address: 6855 W 119th Ave.

E-Mail: bbruns@tasman-geo.com

City/State/Zip: Broomfield, CO 80020


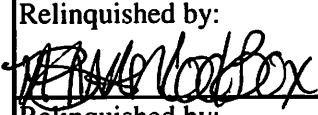
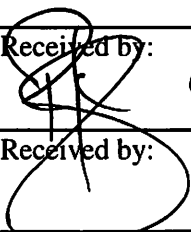
Phone: 303-487-1228

Project Name: Duncan D20-12, 20-13

Sampler Name: Yianni Tsambis

Project Number: n/a

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEX	NAP	1,2,4 TMB	1,3,5 TMB	TDS	Chloride	Sulfate		
1	BH01	2/24/2021	1356	4			X		X				X	X	X	X	X	X	X	915 Standards	
2	BH02	2/24/2021	1341	4			X		X				X	X	X	X	X	X			
3	BH03	2/24/2021	1331	4			X		X				X	X	X	X	X	X			
4	BH04	2/24/2021	1324	4			X		X				X	X	X	X	X	X			
5	BH05	2/24/2021	1349	4			X		X				X	X	X	X	X	X			
6	BH06	2/24/2021	1317	4			X		X				X	X	X	X	X	X			
7	BH07	2/24/2021	1310	4			X		X				X	X	X	X	X	X			
8	BH08	2/24/2021	1259	4			X		X				X	X	X	X	X	X			
9																					
10																					

Relinquished by: 	Date/Time: 2/24/21 1540	Received by: Tasman's Lock Box	Date/Time: 2/24/21 1540	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes:
Relinquished by: 	Date/Time: 2/24/2021 1740	Received by: 	Date/Time: 2/24/2021 1740	Sample Integrity: Temperature Upon Receipt: 2.8 Samples Intact: Yes No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 2102339

Client: Noble/Tasman

Client Project ID: Duncan D20-12,20-13

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

Airbill #: _____

Matrix (check all that apply):

☐ Air

☐ Soil/Solid

☒ Water

☐ Other: _____

(Describe)

Temp (°C)	2.8
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any): 				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

RZ

Custodian Printed Name or Initials

Signature of Custodian

2/24/21

Date/Time



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

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH01
2102339-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	560	100	ug/l	100	BEB0396	02/25/21	02/26/21	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	"	"	
Ethylbenzene	650	100	"	100	"	"	"	"	
Xylenes (total)	1400	200	"	"	"	"	"	"	
Naphthalene	330	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	780	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	1.4	1.0	"	1	"	"	"	"	

Date Sampled: **02/24/21 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	731	12.0	mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Sulfate	1070	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	2620	10.0	mg/L	1	BEC0065	03/03/21	03/03/21	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 - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH02
2102339-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEB0396	02/25/21	02/26/21	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: **02/24/21 13:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		124 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	2270	60.0	mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Chloride	563	12.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	2610	10.0	mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH03
2102339-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEB0396	02/25/21	02/26/21	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: **02/24/21 13:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	507	12.0	mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Sulfate	2070	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	2470	10.0	mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

Summit Scientific

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH04
2102339-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:24**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEB0396	02/25/21	02/26/21	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	12	2.0	"	"	"	"	"	"	
Naphthalene	5.8	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	14	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	1.1	1.0	"	"	"	"	"	"	

Date Sampled: **02/24/21 13:24**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<i>Surrogate: 1,2-Dichloroethane-d4</i>		122 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:24**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	2510	60.0	mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Chloride	668	12.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:24**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	2790	10.0	mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Brun

Reported:
03/03/21 12:58

BH05
2102339-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	280	100	ug/l	100	BEB0396	02/25/21	02/26/21	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	"	"	
Ethylbenzene	630	100	"	100	"	"	"	"	
Xylenes (total)	1400	200	"	"	"	"	"	"	
Naphthalene	300	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	570	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	1.6	1.0	"	1	"	"	"	"	

Date Sampled: **02/24/21 13:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	592	12.0	mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Sulfate	1260	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	2530	10.0	mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

Summit Scientific

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH06
2102339-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:17**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEB0396	02/25/21	02/26/21	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: **02/24/21 13:17**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		125 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:17**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Sulfate	2770	60.0		mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Chloride	827	12.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:17**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3160	10.0		mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH07
2102339-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 13:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEB0396	02/25/21	02/26/21	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: **02/24/21 13:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		125 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 13:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	1150	12.0		mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Sulfate	2680	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 13:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3490	10.0		mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

BH08
2102339-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/24/21 12:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEB0396	02/25/21	02/26/21	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: **02/24/21 12:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		127 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/24/21 12:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Sulfate	2600	60.0		mg/L	200	BEC0043	03/02/21	03/03/21	EPA 300.0	
Chloride	764	12.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/24/21 12:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3110	10.0		mg/L	1	BEC0065	03/03/21	03/03/21	SM2540C	

Summit Scientific

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEB0396 - EPA 5030 Water MS

Blank (BEB0396-BLK1)

Prepared: 02/25/21 Analyzed: 02/27/21

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	16.0		"	13.3		120	23-173			
Surrogate: Toluene-d8	12.5		"	13.3		93.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

LCS (BEB0396-BS1)

Prepared: 02/25/21 Analyzed: 02/27/21

Benzene	41.7	1.0	ug/l	41.7		100	51-132			
Toluene	38.0	1.0	"	41.7		91.1	51-138			
Ethylbenzene	42.1	1.0	"	41.7		101	58-146			
m,p-Xylene	77.6	2.0	"	83.3		93.2	57-144			
o-Xylene	41.1	1.0	"	41.7		98.7	53-146			
Naphthalene	45.3	1.0	"	41.7		109	70-130			
1,2,4-Trimethylbenzene	43.7	1.0	"	41.7		105	70-130			
1,3,5-Trimethylbenzene	41.8	1.0	"	41.7		100	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.4		"	13.3		116	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.5	20-170			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		105	21-167			

Matrix Spike (BEB0396-MS1)

Source: 2102324-01

Prepared: 02/25/21 Analyzed: 02/28/21

Benzene	42.2	1.0	ug/l	41.7	ND	101	34-141			
Toluene	39.2	1.0	"	41.7	ND	94.1	27-151			
Ethylbenzene	42.7	1.0	"	41.7	ND	102	29-160			
m,p-Xylene	79.1	2.0	"	83.3	ND	95.0	20-166			
o-Xylene	41.6	1.0	"	41.7	ND	99.8	33-159			
Naphthalene	51.4	1.0	"	41.7	ND	123	70-130			
1,2,4-Trimethylbenzene	45.0	1.0	"	41.7	ND	108	70-130			
1,3,5-Trimethylbenzene	42.4	1.0	"	41.7	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

Summit Scientific

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/03/21 12:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch BEB0396 - EPA 5030 Water MS

Matrix Spike Dup (BEB0396-MSD1)	Source: 2102324-01			Prepared: 02/25/21 Analyzed: 02/28/21						
Benzene	43.1	1.0	ug/l	41.7	ND	103	34-141	2.21	30	
Toluene	42.9	1.0	"	41.7	ND	103	27-151	8.95	30	
Ethylbenzene	42.9	1.0	"	41.7	ND	103	29-160	0.607	30	
m,p-Xylene	79.8	2.0	"	83.3	ND	95.8	20-166	0.893	30	
o-Xylene	41.5	1.0	"	41.7	ND	99.6	33-159	0.169	30	
Naphthalene	52.8	1.0	"	41.7	ND	127	70-130	2.71	30	
1,2,4-Trimethylbenzene	45.6	1.0	"	41.7	ND	110	70-130	1.35	30	
1,3,5-Trimethylbenzene	42.5	1.0	"	41.7	ND	102	70-130	0.0942	30	
Surrogate: 1,2-Dichloroethane-d4	15.5		"	13.3		116	23-173			
Surrogate: Toluene-d8	14.3		"	13.3		107	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

Summit Scientific

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/03/21 12:58

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 BEC0043 - General Preparation

Blank (BEC0043-BLK1)

Prepared: 03/02/21 Analyzed: 03/03/21

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (BEC0043-BS1)

Prepared: 03/02/21 Analyzed: 03/03/21

Sulfate	14.9	0.300	mg/L	15.0	99.6	90-110
Chloride	2.78	0.0600	"	3.00	92.6	90-110

Duplicate (BEC0043-DUP1)

Source: 2103018-01

Prepared: 03/02/21 Analyzed: 03/03/21

Sulfate	23.4	0.300	mg/L	23.6	0.762	20
Chloride	4380	0.0600	"	4410	0.701	20

Matrix Spike (BEC0043-MS1)

Source: 2103018-01

Prepared: 03/02/21 Analyzed: 03/03/21

Chloride	3790	0.0600	mg/L	3.00	4410	NR	80-120	QM-02
Sulfate	37.7	0.300	"	15.0	23.6	94.4	80-120	

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6855 W. 119th Ave.
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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

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 BEC0065 - General Preparation

Blank (BEC0065-BLK1)

Prepared & Analyzed: 03/03/21

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BEC0065-DUP1)

Source: 2102339-01

Prepared & Analyzed: 03/03/21

Total Dissolved Solids 2610 10.0 mg/L 2620 0.650 20

Summit Scientific

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

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/03/21 12:58

Notes and Definitions

QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
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