

BATES 20-22
FLOWLINE RELEASE
API #: 05-123-24849
Remediation #: 9872
Form 27 Document #: 200440424

SECOND QUARTER 2018
Analytical Tables, Figures,
and Laboratory Reports

April 26, 2018



Image: Google

PREPARED ON BEHALF OF

Noble Energy, Inc.
2115 117th Avenue
Greeley, CO 80631



PREPARED BY

Tasman Geosciences, Inc.
6899 Pecos Street, Unit C
Denver, CO 80221



TABLE 1
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - BATES 20-22
FLOWLINE RELEASE



Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
COGCC Groundwater Standard (µg/L)		5	560	700	1,400
BH01	03/22/16	<1.0	<1.0	<1.0	<1.0
BH01	07/13/16	<1.0	<1.0	<1.0	<1.0
BH01	10/03/16	<1.0	<1.0	<1.0	<1.0
BH01	01/03/17	<1.0	<1.0	<1.0	<1.0
BH01	04/06/17	<1.0	<1.0	<1.0	<2.0
BH01	07/05/17	<1.0	<1.0	<1.0	<2.0
BH01	10/12/17	<1.0	<1.0	<1.0	<2.0
BH01	01/05/18	<1.0	<1.0	<1.0	<2.0
BH01	04/16/18	<1.0	<1.0	<1.0	<2.0
BH02	03/22/16	<1.0	<1.0	<1.0	<1.0
BH02	07/13/16	<1.0	<1.0	<1.0	<1.0
BH02	10/03/16	<1.0	<1.0	<1.0	<1.0
BH02	01/03/17	<1.0	<1.0	<1.0	<1.0
BH02	04/06/17	<1.0	<1.0	<1.0	<2.0
BH02	07/05/17	<1.0	<1.0	<1.0	<2.0
BH02	10/12/17	<1.0	<1.0	<1.0	<2.0
BH02	01/05/18	<1.0	<1.0	<1.0	<2.0
BH02	04/16/18	<1.0	<1.0	<1.0	<2.0
BH03	03/22/16	92	210	66	470
BH03	07/13/16	<1.0	<1.0	<1.0	<1.0
BH03	10/03/16	<1.0	<1.0	<1.0	<1.0
BH03	01/03/17	<1.0	<1.0	<1.0	<1.0
BH03	04/06/17	<1.0	<1.0	<1.0	<2.0
BH03	07/05/17	<1.0	<1.0	<1.0	<2.0
BH03	10/12/17	<1.0	<1.0	<1.0	<2.0
BH03	01/05/18	<1.0	<1.0	<1.0	<2.0
BH03	04/16/18	<1.0	<1.0	<1.0	<2.0
BH04	03/22/16	<1.0	<1.0	<1.0	<1.0
BH04	07/13/16	<1.0	<1.0	<1.0	<1.0
BH04	10/03/16	<1.0	<1.0	<1.0	<1.0
BH04	01/03/17	<1.0	<1.0	<1.0	<1.0
BH04 ¹	04/06/17	<1.0	<1.0	<1.0	<2.0
BH04	07/05/17	<1.0	<1.0	<1.0	<2.0
BH04	10/12/17	<1.0	<1.0	<1.0	<2.0
BH04	01/05/18	<1.0	<1.0	<1.0	<2.0
BH04	04/16/18	<1.0	<1.0	<1.0	<2.0
BH05	03/22/16	<1.0	<1.0	<1.0	<1.0
BH05	07/13/16	<1.0	<1.0	<1.0	<1.0
BH05	10/03/16	<1.0	<1.0	<1.0	<1.0
BH05	01/03/17	<1.0	<1.0	<1.0	<1.0
BH05	04/06/17	<1.0	<1.0	<1.0	<2.0
BH05	07/05/17	<1.0	<1.0	<1.0	<2.0
BH05	10/12/17	<1.0	<1.0	<1.0	<2.0
BH05	01/05/18	<1.0	<1.0	<1.0	<2.0
BH05	04/16/18	<1.0	<1.0	<1.0	<2.0
BH06	03/22/16	<1.0	<1.0	<1.0	<1.0

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FLOWLINE RELEASE



Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
COGCC Groundwater Standard (µg/L)		5	560	700	1,400
BH06	07/13/16	<1.0	<1.0	<1.0	<1.0
BH06	10/03/16	<1.0	<1.0	<1.0	<1.0
BH06	01/03/17	<1.0	<1.0	<1.0	<1.0
BH06 ¹	04/06/17	<1.0	<1.0	<1.0	<2.0
BH06	07/05/17	<1.0	<1.0	<1.0	<2.0
BH06	10/12/17	<1.0	<1.0	<1.0	<2.0
BH06	01/05/18	<1.0	<1.0	<1.0	<2.0
BH06	04/16/18	<1.0	<1.0	<1.0	<2.0
BH07	03/22/16	62	170	24	150
BH07	07/13/16	Not Sampled - LNAPL Present			
BH07	10/03/16	<1.0	<1.0	<1.0	<1.0
BH07	01/03/17	<1.0	<1.0	<1.0	<1.0
BH07	04/06/17	<1.0	<1.0	<1.0	<2.0
BH07	07/05/17	10	9.8	14	130
BH07	10/12/17	<1.0	<1.0	<1.0	<2.0
BH07	01/05/18	<1.0	<1.0	<1.0	<2.0
BH07	04/16/18	<1.0	<1.0	<1.0	<2.0
BH08	03/22/16	<1.0	<1.0	<1.0	<1.0
BH08	07/13/16	<1.0	<1.0	<1.0	<1.0
BH08	10/03/16	<1.0	<1.0	<1.0	<1.0
BH08	01/03/17	<1.0	<1.0	<1.0	<1.0
BH08 ¹	04/06/17	<1.0	<1.0	<1.0	<2.0
BH08	07/05/17	<1.0	<1.0	<1.0	<2.0
BH08	10/12/17	<1.0	<1.0	<1.0	<2.0
BH08	01/05/18	<1.0	<1.0	<1.0	<2.0
BH08	04/16/18	<1.0	<1.0	<1.0	<2.0
BH12	07/15/16	<1.0	<1.0	<1.0	<1.0
BH12	10/03/16	<1.0	<1.0	<1.0	<1.0
BH12	01/03/17		Well Dry - Not Sampled		
BH12	04/06/17		Well Dry - Not Sampled		
BH12	07/05/17	<1.0	<1.0	<1.0	<2.0
BH12	10/12/17	<1.0	<1.0	<1.0	<2.0
BH12	01/05/18		Well Dry - Not Sampled		
BH12	04/16/18		Well Dry - Not Sampled		

Notes:

1) Grab sample, insufficient water to purge well.

COGCC = Colorado Oil and Gas Conservation Commission

LNAPL = Light Non-Aqueous Phase Liquid

µg/L = Micrograms per liter

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

Groundwater standards referenced from COGCC Table 910-1

Highlighted results exceed the COGCC Table 910-1 standard

TABLE 2
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - BATES 20-22
FLOWLINE RELEASE



Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BTOC)	Depth to LNAPL (ft. BTOC)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	03/22/16	4716.21	12.75	8.33	ND	ND	4707.88
BH01	07/13/16	4716.21	12.75	3.69	ND	ND	4712.52
BH01	10/03/16	4716.21	12.75	7.02	ND	ND	4709.19
BH01	01/03/17	4716.21	12.75	8.89	ND	ND	4707.32
BH01	04/06/17	4716.21	12.76	9.10	ND	ND	4707.11
BH01	07/05/17	4716.21	12.74	3.40	ND	ND	4712.81
BH01	10/12/17	4716.21	12.78	7.43	ND	ND	4708.78
BH01	01/05/18	4716.21	12.74	8.18	ND	ND	4708.03
BH01	04/16/18	4716.21	12.60	8.42	ND	ND	4707.79
BH02	03/22/16	4715.15	10.95	7.18	ND	ND	4707.97
BH02	07/13/16	4715.15	10.95	2.67	ND	ND	4712.48
BH02	10/03/16	4715.15	10.95	5.71	ND	ND	4709.44
BH02	01/03/17	4715.15	10.95	7.81	ND	ND	4707.34
BH02	04/06/17	4715.15	11.38	7.92	ND	ND	4707.23
BH02	07/05/17	4715.15	11.25	2.23	ND	ND	4712.92
BH02	10/12/17	4715.15	11.31	6.27	ND	ND	4708.88
BH02	01/05/18	4715.15	11.28	7.00	ND	ND	4708.15
BH02	04/16/18	4715.15	11.19	7.24	ND	ND	4707.91
BH03	03/22/16	4714.36	12.13	8.03	ND	ND	4706.33
BH03	07/13/16	4714.36	12.13	4.32	ND	ND	4710.04
BH03	10/03/16	4714.36	12.13	7.11	ND	ND	4707.25
BH03	01/03/17	4714.36	12.13	8.74	ND ¹	ND ¹	4705.62
BH03	04/06/17	4714.36	12.14	8.83	ND	ND	4705.53
BH03	07/05/17	4714.36	12.14	4.14	ND	ND	4710.22
BH03	10/12/17	4714.36	12.18	7.16	ND	ND	4707.20
BH03	01/05/18	4715.36	12.13	7.91	ND	ND	4707.45
BH03	04/16/18	4715.36	12.17	8.11	ND	ND	4707.25
BH04	03/22/16	4714.35	9.85	7.50	ND	ND	4706.85
BH04	07/13/16	4714.35	9.85	4.56	ND	ND	4709.79
BH04	10/03/16	4714.35	9.85	6.88	ND	ND	4707.47
BH04	01/03/17	4714.35	9.85	8.24	ND	ND	4706.11
BH04	04/06/17	4714.35	9.86	8.37	ND	ND	4705.98
BH04	07/05/17	4714.35	9.71	4.13	ND	ND	4710.22
BH04	10/12/17	4714.35	9.75	6.73	ND	ND	4707.62
BH04	01/05/18	4714.35	9.70	7.50	ND	ND	4706.85
BH04	04/16/18	4714.35	9.71	7.64	ND	ND	4706.71
BH05	03/22/16	4714.40	10.17	7.13	ND	ND	4707.27
BH05	07/13/16	4714.40	10.17	4.11	ND	ND	4710.29
BH05	10/03/16	4714.40	10.17	6.48	ND	ND	4707.92
BH05	01/03/17	4714.40	10.17	7.92	ND	ND	4706.48
BH05	04/06/17	4714.40	10.20	8.13	ND	ND	4706.27
BH05	07/05/17	4714.40	10.11	3.74	ND	ND	4710.66
BH05	10/12/17	4714.40	10.22	6.45	ND	ND	4707.95
BH05	01/05/18	4714.40	10.18	7.20	ND	ND	4707.20
BH05	04/16/18	4714.40	10.18	7.35	ND	ND	4707.05
BH06	03/22/16	4714.67	17.00	7.24	ND	ND	4707.43
BH06	07/13/16	4714.67	9.83	3.70	ND	ND	4710.97
BH06	10/03/16	4714.67	9.83	6.39	ND	ND	4708.28

TABLE 2
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - BATES 20-22
FLOWLINE RELEASE



Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BTOC)	Depth to LNAPL (ft. BTOC)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH06	01/03/17	4714.67	9.83	7.93	ND	ND	4706.74
BH06	04/06/17	4714.67	9.84	8.06	ND	ND	4706.61
BH06	07/05/17	4714.67	9.80	3.49	ND	ND	4711.18
BH06	10/12/17	4714.67	9.83	6.44	ND	ND	4708.23
BH06	01/05/18	4714.67	9.79	7.19	ND	ND	4707.48
BH06	04/16/18	4714.67	9.83	7.34	ND	ND	4707.33
BH07	03/22/16	4716.10	12.60	8.85	ND	ND	4707.25
BH07	07/13/16	4716.10	12.60	5.45	5.35	0.10	4710.73
BH07	10/03/16	4716.10	12.60	8.02	ND ¹	ND ¹	4708.08
BH07	01/03/17	4716.10	12.60	9.51	ND	ND	4706.59
BH07	04/06/17	4716.10	12.61	9.62	ND	ND	4706.48
BH07	07/05/17	4716.10	12.60	5.03	ND	ND	4711.07
BH07	10/12/17	4716.10	12.63	8.01	ND	ND	4708.09
BH07	01/05/18	4716.10	12.60	8.77	ND	ND	4707.33
BH07	04/16/18	4716.10	12.63	8.94	ND	ND	4707.16
BH08	03/22/16	4714.24	9.63	7.80	ND	ND	4706.44
BH08	07/13/16	4714.24	9.63	3.83	ND	ND	4710.41
BH08	10/03/16	4714.24	9.63	6.53	ND	ND	4707.71
BH08	01/03/17	4714.24	9.63	7.94	ND	ND	4706.30
BH08	04/06/17	4714.24	9.60	8.10	ND	ND	4706.14
BH08	07/05/17	4714.24	9.52	3.62	ND	ND	4710.62
BH08	10/12/17	4714.24	9.66	6.42	ND	ND	4707.82
BH08	01/05/18	4714.24	9.63	7.17	ND	ND	4707.07
BH08	04/16/18	4714.24	9.66	7.33	ND	ND	4706.91
BH12	07/15/16	4715.58	9.88	4.92	ND	ND	4710.66
BH12	10/03/16	4715.58	8.86	7.76	ND	ND	4707.82
BH12	01/03/17	4715.58	8.80	ND	ND	ND	DRY
BH12	04/06/17	4715.58	8.82	ND	ND	ND	DRY
BH12	07/05/17	4715.58	8.80	4.72	ND	ND	4710.86
BH12	10/12/17	4715.58	8.81	7.63	ND	ND	4707.95
BH12	01/05/18	4715.58	8.82	8.41	ND	ND	4707.17
BH12	04/16/18	4715.58	8.89	8.95	ND	ND	4706.63

Notes:

ft. = Feet

ND = Not Detected

LNAPL = Light non-aqueous phase liquid

DRY = No measurable water present

AMSL = Above mean sea level

BTOC = Below top of casing

1. Sheen present on groundwater

* 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

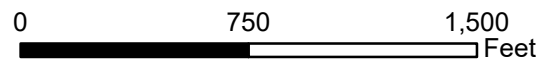
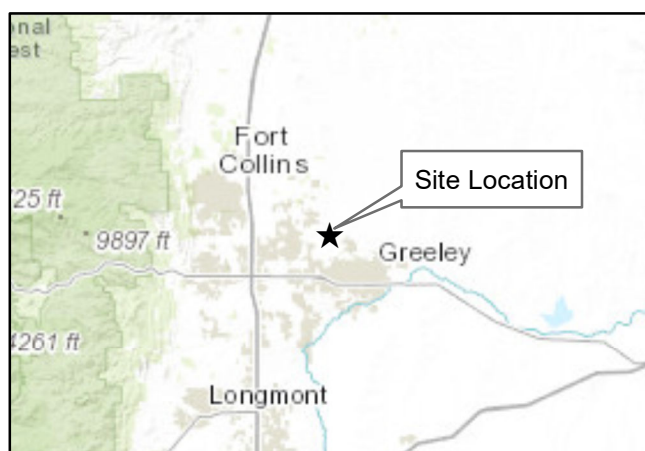
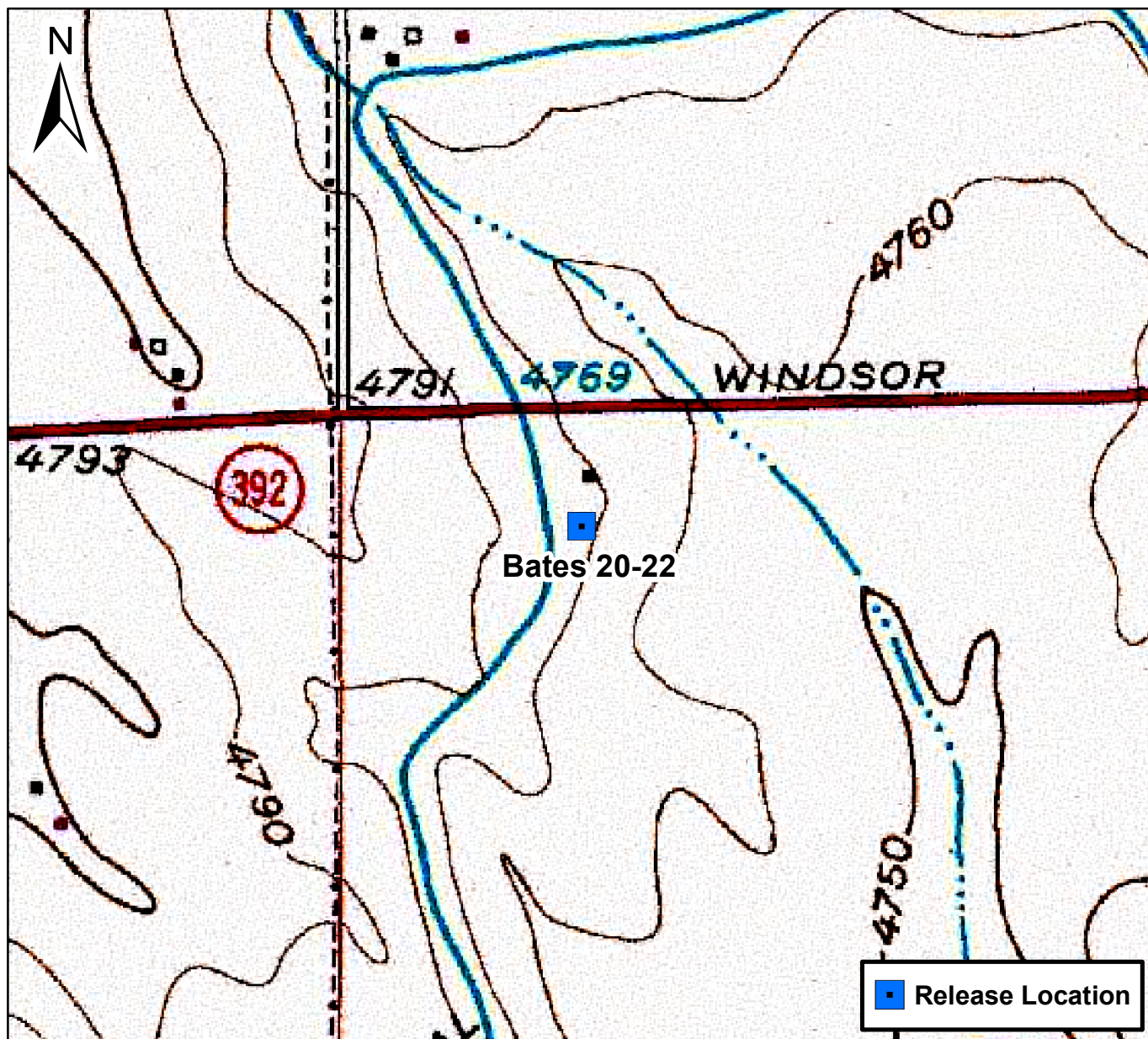


Figure 1

Site Location Map

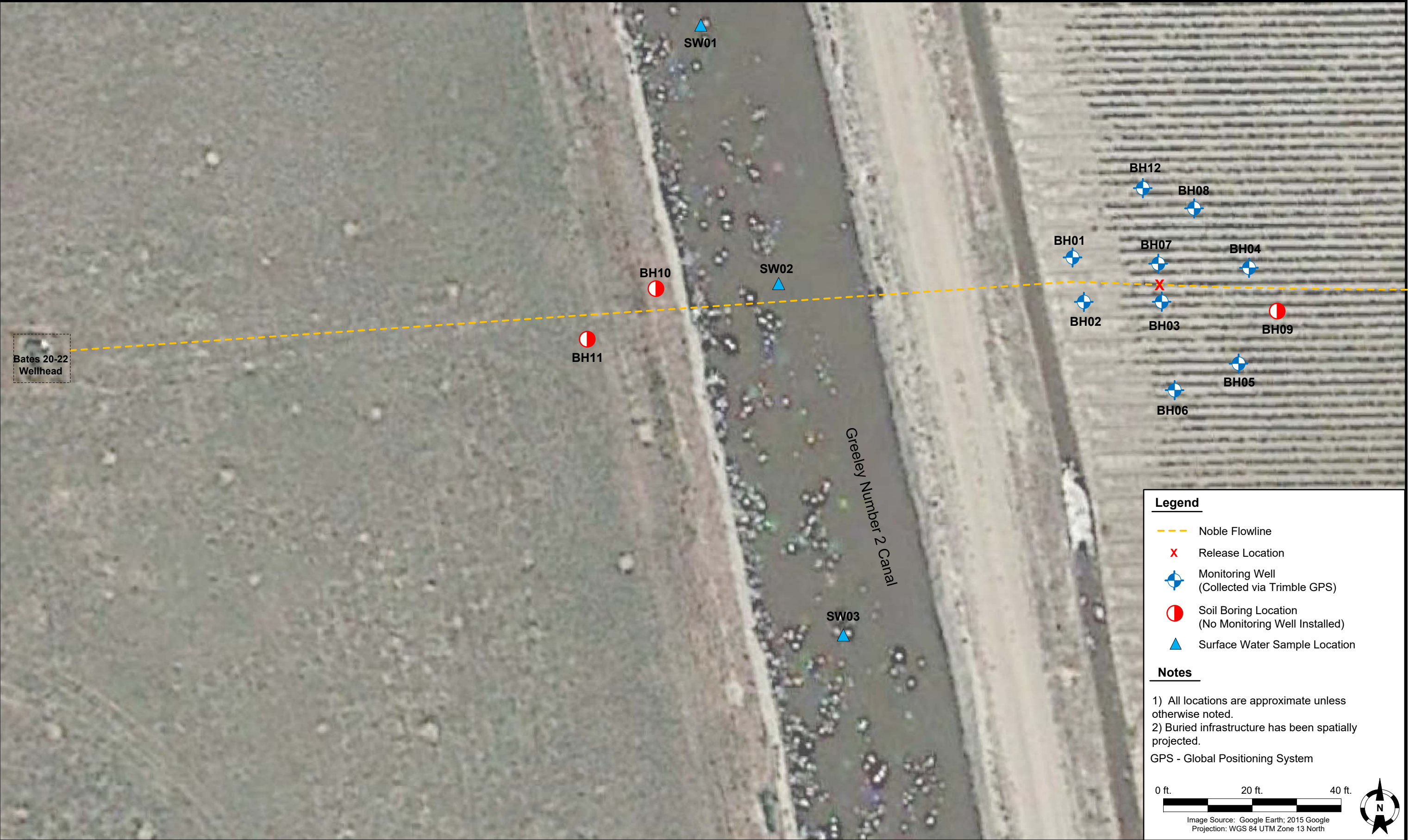
Bates 20-22


Flowline Release

NWNW S20 T6N R66W

Weld County, Colorado





DATE: 01/15/2018	 <div>Tasman Geosciences, Inc. 6899 Pecos Street – Unit C Denver, CO 80221</div>	Noble Energy, Inc. – DJ Basin Bates 20-22 Flowline Release NWNW, Section 20, Township 6 North, Range 66 West Weld County, Colorado	Site Overview Map	FIGURE 2
DESIGNED BY: DA				
DRAWN BY: GB				





Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 19, 2018

Brandon Bruns
Tasman Geosciences
6899 Pecos St, Unit C
Denver, CO 80221
RE: Noble - Bates 22-10

Enclosed are the results of analyses for samples received by Summit Scientific on 04/16/18 17:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1804245-01	Water	04/16/18 10:20	04/16/18 17:10
BH02	1804245-02	Water	04/16/18 10:30	04/16/18 17:10
BH03	1804245-03	Water	04/16/18 10:40	04/16/18 17:10
BH04	1804245-04	Water	04/16/18 10:00	04/16/18 17:10
BH05	1804245-05	Water	04/16/18 10:20	04/16/18 17:10
BH06	1804245-06	Water	04/16/18 10:40	04/16/18 17:10
BH07	1804245-07	Water	04/16/18 10:10	04/16/18 17:10
BH08	1804245-08	Water	04/16/18 09:50	04/16/18 17:10

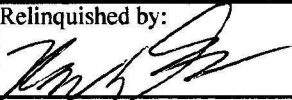
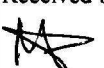
Summit Scientific

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

Page 1 of 1

Project Manager: Bradley Bruns Invoice: Jacob Evans
E-Mail: bbruns@ferman-geo.com
Project Name: Bates 22-10
Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:										Special Instructions				
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX													
BH01	4/16/18	1020	3			X		X				X													
BH02		1030																							
BH03		1040																							
BH04		1000																							
BH05		1020																							
BH06		1040																							
BH07		1010																							
BH08		0950																							
Relinquished by: 				Date/Time: 4/16/18 17:10		Received by:  4-16-18		Date/Time: 17:10		Turn Around Time (Check)										Notes:					
Relinquished by:				Date/Time:		Received by:		Date/Time:		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"/>															
Relinquished by:				Date/Time:		Received in Lab by:		Date/Time:		Sample Integrity: Temperature Upon Receipt: 1.7 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>															

Sample Receipt Checklist

S2 Work Order: 1804245

Client: Noble/Tasman

Client Project ID: Bates 2210

Shipped Via: P.O.

Airbill #:

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): Air Soil/Solid X Water Other: (Describe)

Temp (°C)	<u>1.7</u>
-----------	------------

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.	<u>X</u>			
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>X</u>	
Are short holding time analytes or samples due within 48 hours present?			<u>X</u>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<u>X</u>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCL, H2SO4, NaOH, HNO3, etc.			<u>X</u>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<u>X</u>	
If dissolved metals are requested, were samples field filtered?			<u>X</u>	
Additional Comments (if any):				

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

Muro
Custodian Printed Name or Initials

18 4-16-18
Signature of Custodian

17:45
Date/Time



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH01
1804245-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH02
1804245-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		94.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH03
1804245-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH04
1804245-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	45-146		"	"	"	"	

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH05
1804245-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH06
1804245-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		91.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH07
1804245-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

BH08
1804245-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/16/18 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804132	04/17/18	04/18/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/16/18 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		91.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.1 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1804132 - EPA 5030 Water MS

Blank (1804132-BLK1)

Prepared: 04/17/18 Analyzed: 04/18/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	10.5		"	13.2		79.6	70-130			
Surrogate: Toluene-d8	12.2		"	13.3		91.5	70-130			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.3	70-130			

LCS (1804132-BS1)

Prepared: 04/17/18 Analyzed: 04/18/18

Benzene	28.3	1.0	ug/l	33.3		85.0	70-130			
Toluene	32.0	1.0	"	33.3		96.0	70-130			
Ethylbenzene	37.3	1.0	"	33.3		112	70-130			
m,p-Xylene	75.9	2.0	"	66.7		114	70-130			
o-Xylene	37.2	1.0	"	33.3		112	70-130			
Xylenes (total)	113	2.0	"				63-131			
Surrogate: 1,2-Dichloroethane-d4	10.9		"	13.2		82.4	70-130			
Surrogate: Toluene-d8	11.7		"	13.3		87.6	70-130			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.6	70-130			

Matrix Spike (1804132-MS1)

Source: 1804081-01

Prepared: 04/17/18 Analyzed: 04/18/18

Benzene	29.6	1.0	ug/l	33.3	ND	88.9	70-130			
Toluene	32.6	1.0	"	33.3	ND	97.8	70-130			
Ethylbenzene	38.0	1.0	"	33.3	ND	114	70-130			
m,p-Xylene	79.2	2.0	"	66.7	ND	119	70-130			
o-Xylene	38.5	1.0	"	33.3	ND	115	70-130			
Xylenes (total)	118	2.0	"		ND		63-131			
Surrogate: 1,2-Dichloroethane-d4	11.6		"	13.2		88.0	70-130			
Surrogate: Toluene-d8	12.0		"	13.3		89.8	70-130			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.9	70-130			

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

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 1804132 - EPA 5030 Water MS

Matrix Spike Dup (1804132-MSD1)		Source: 1804081-01			Prepared: 04/17/18		Analyzed: 04/18/18			
Benzene	29.9	1.0	ug/l	33.3	ND	89.6	70-130	0.806	30	
Toluene	33.7	1.0	"	33.3	ND	101	70-130	3.35	30	
Ethylbenzene	39.6	1.0	"	33.3	ND	119	70-130	4.15	30	
m,p-Xylene	80.1	2.0	"	66.7	ND	120	70-130	1.17	30	
o-Xylene	39.4	1.0	"	33.3	ND	118	70-130	2.41	30	
Xylenes (total)	119	2.0	"		ND		63-131	1.58	20	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	11.5		"	13.2		87.0	70-130			
Surrogate: Toluene-d8	11.9		"	13.3		89.0	70-130			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.4	70-130			

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bates 22-10

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/19/18 13:26

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