

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

**THIRD QUARTER 2018**  
**Analytical Tables, Figures,**  
**and Laboratory Reports**

July 3, 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)
<b>COGCC Groundwater Standard (µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
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
BH01	07/03/18	<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
BH02	07/03/18	<1.0	<1.0	<1.0	<2.0
BH03	03/22/16	<b>92</b>	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
BH03	07/03/18	<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 <sup>1</sup>	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
BH04	07/03/18	<1.0	<1.0	<1.0	<2.0
BH05	03/22/16	<1.0	<1.0	<1.0	<1.0

**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)
<b>COGCC Groundwater Standard (µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
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
BH05	07/03/18	<1.0	<1.0	<1.0	<2.0
BH06	03/22/16	<1.0	<1.0	<1.0	<1.0
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 <sup>1</sup>	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
BH06	07/03/18	<1.0	<1.0	<1.0	<2.0
BH07	03/22/16	<b>62</b>	170	24	150
BH07	07/13/16	<b>Not Sampled - LNAPL Present</b>			
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	<b>10</b>	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
BH07	07/03/18	<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 <sup>1</sup>	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
BH08	07/03/18	<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

**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)
<b>COGCC Groundwater Standard (µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
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		
BH12	07/03/18	<1.0	<1.0	<1.0	<2.0

**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
BH01	07/03/18	4716.21	12.57	5.51	ND	ND	4710.70
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
BH02	07/03/18	4715.15	10.95	4.09	ND	ND	4711.06
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 <sup>1</sup>	ND <sup>1</sup>	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
BH03	07/03/18	4715.36	12.15	6.19	ND	ND	4709.17
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
BH04	07/03/18	4714.35	9.68	5.07	ND	ND	4709.28
BH05	03/22/16	4714.40	10.17	7.13	ND	ND	4707.27

**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)
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
BH05	07/03/18	4714.40	10.04	4.88	ND	ND	4709.52
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
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
BH06	07/03/18	4714.67	9.80	5.14	ND	ND	4709.53
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 <sup>1</sup>	ND <sup>1</sup>	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
BH07	07/03/18	4716.10	12.62	7.35	ND	ND	4708.75
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
BH08	07/03/18	4714.24	9.66	5.47	ND	ND	4708.77
BH12	07/15/16	4715.58	9.88	4.92	ND	ND	4710.66

**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)
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
BH12	07/03/18	4715.58	8.95	7.06	ND	ND	4708.52

**Notes:**

ft. = Feet

ND = Not Detected

LNAPL = Light non-aqueous phase liquid

DRY = No measurable water present

AMSL = Above mean sea level

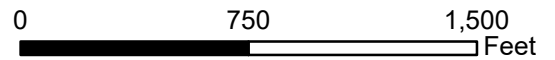
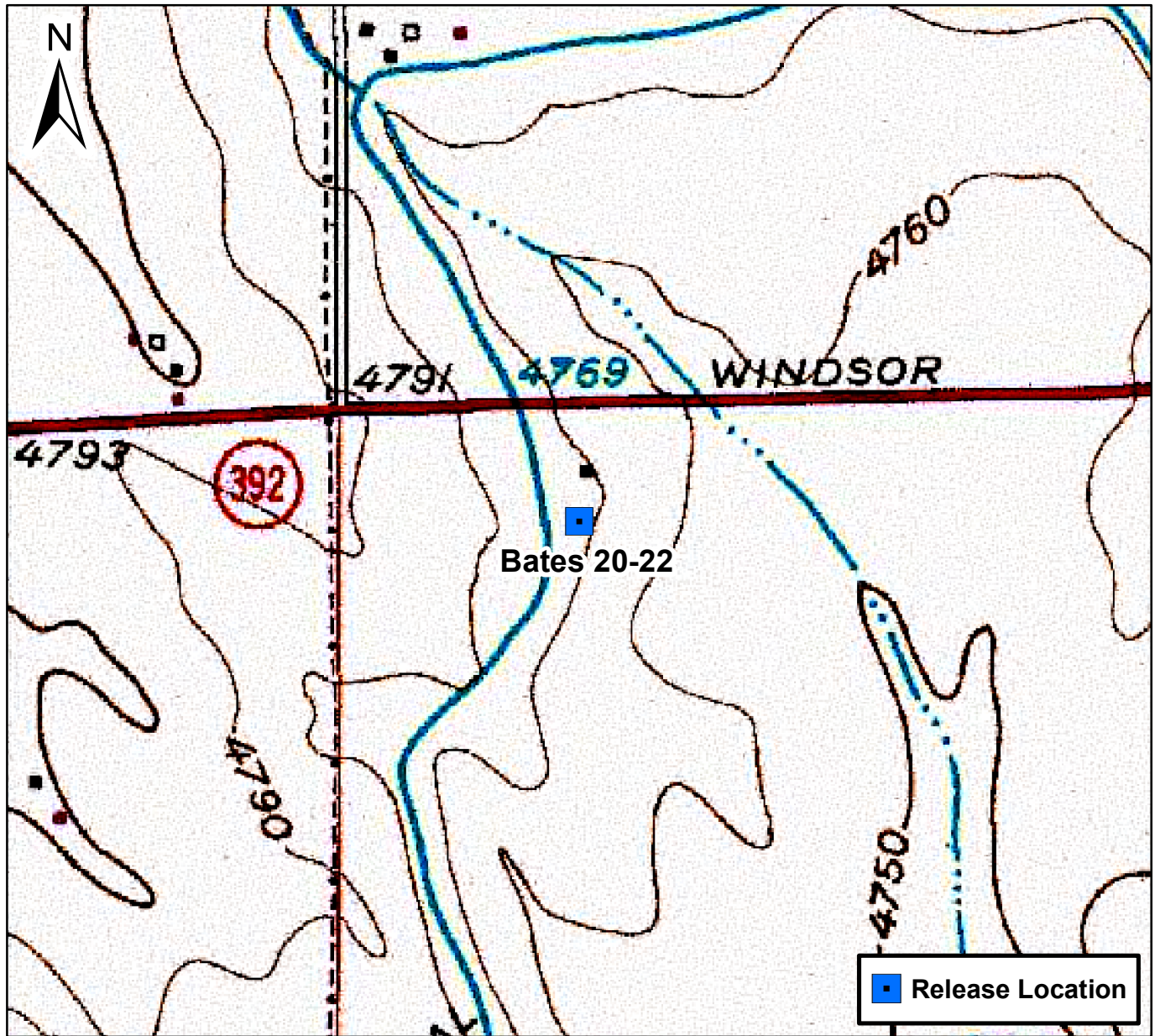
BTOC = Below top of casing

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)

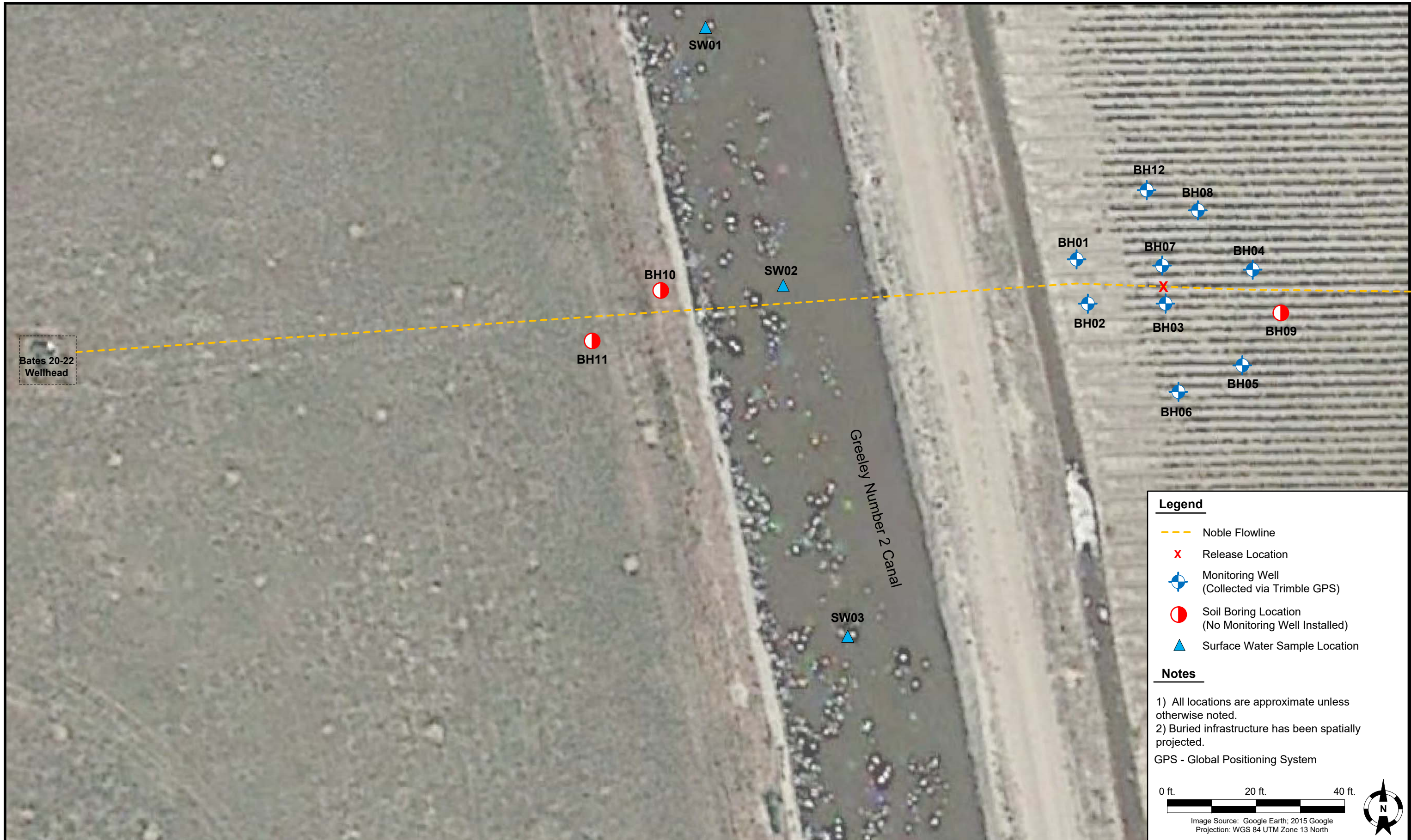
LNAPL relative density was estimated to be approximately 0.75



### Figure 1

Site Location Map  
 Bates 20-22  
 Flowline Release  
 NWNW S20 T6N R66W  
 Weld County, Colorado





**Legend**

- Noble Flowline
- X Release Location
- + Monitoring Well (Collected via Trimble GPS)
- Soil Boring Location (No Monitoring Well Installed)
- ▲ Surface Water Sample Location

**Notes**

- 1) All locations are approximate unless otherwise noted.
- 2) Buried infrastructure has been spatially projected.

GPS - Global Positioning System

0 ft.      20 ft.      40 ft.

Image Source: Google Earth; 2015 Google  
Projection: WGS 84 UTM Zone 13 North

DATE:	07/03/18
DESIGNED BY:	DA
DRAWN BY:	MG

**TASMAN**  
GEOSCIENCES

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

**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



DATE:	07/03/18
DESIGNED BY:	DA
DRAWN BY:	MG

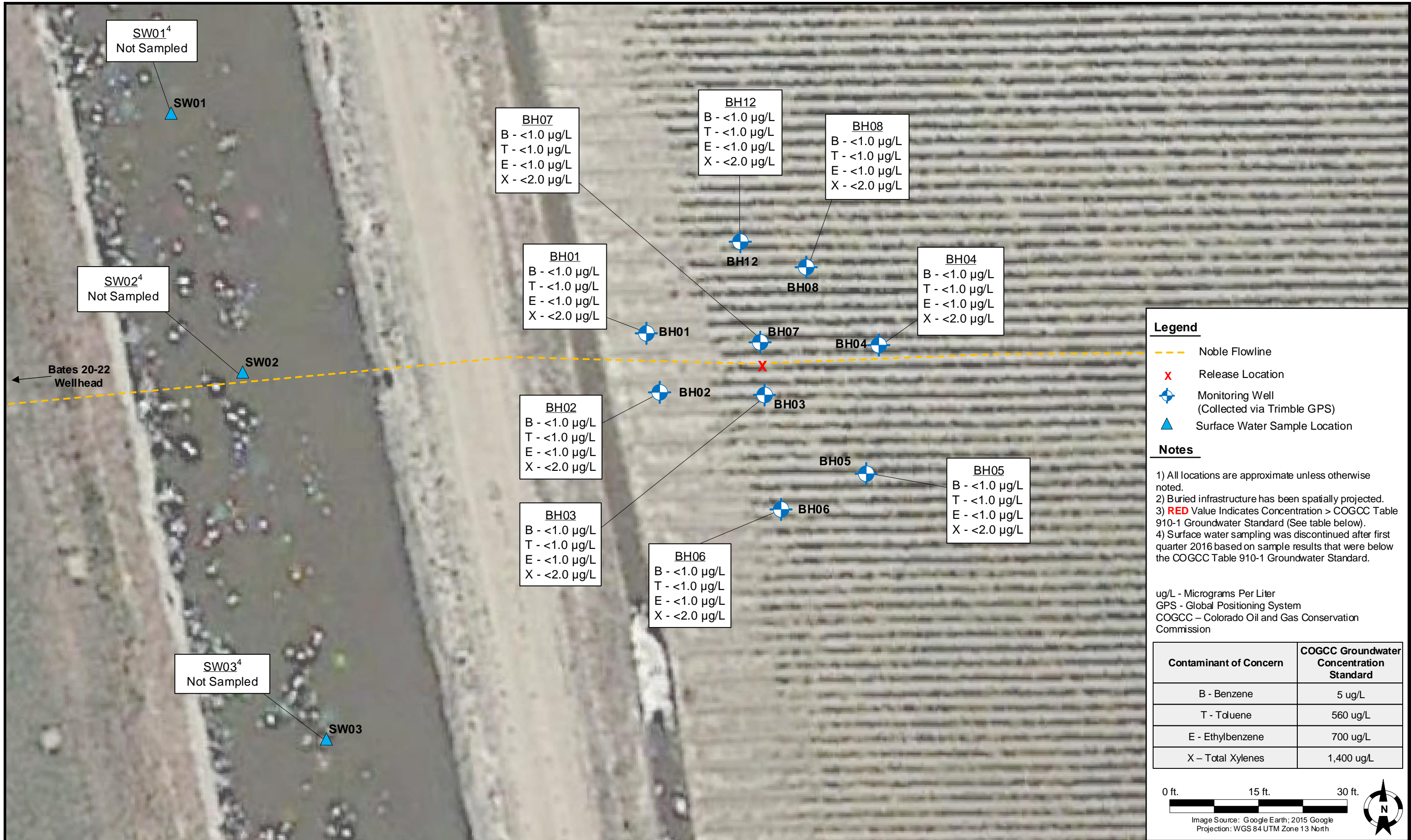


**TASMAN**  
GEOSCIENCES

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

**Noble Energy, Inc. – DJ Basin**  
**Bates 20-22 Flowline Release**  
NWNW, Section 20, Township 6 North, Range 66 West  
Weld County, Colorado

Groundwater Potentiometric  
Surface Contour Map  
(July 3rd, 2018)



DATE: 07/03/18

DESIGNED BY: DA

DRAWN BY: MG

**TASMAN**  
GEOSCIENCES

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

**Noble Energy, Inc. – DJ Basin**  
**Bates 20-22 Flowline Release**  
NWNW, Section 20, Township 6 North, Range 66 West  
Weld County, Colorado

Groundwater Analytical  
Results Map  
(July 3, 2018)

FIGURE  
4

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 10, 2018

Brandon Bruns  
Tasman Geosciences  
6899 Pecos St, Unit C  
Denver, CO 80221  
RE: Noble - Bates 20-22

Enclosed are the results of analyses for samples received by Summit Scientific on 07/03/18 18:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/10/18 08:06

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1807031-01	Water	07/03/18 10:40	07/03/18 18:45
BH02	1807031-02	Water	07/03/18 10:30	07/03/18 18:45
BH03	1807031-03	Water	07/03/18 10:20	07/03/18 18:45
BH04	1807031-04	Water	07/03/18 10:20	07/03/18 18:45
BH05	1807031-05	Water	07/03/18 10:25	07/03/18 18:45
BH06	1807031-06	Water	07/03/18 10:35	07/03/18 18:45
BH07	1807031-07	Water	07/03/18 10:32	07/03/18 18:45
BH08	1807031-08	Water	07/03/18 10:15	07/03/18 18:45
BH12	1807031-09	Water	07/03/18 10:05	07/03/18 18:45

Summit Scientific

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**Sample Receipt Checklist**

S2 Work Order: 1807031

Client: Noble/Tasman Client Project ID: Bates 20-22

Shipped Via: Pickup Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Temp (°C)	9.0
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? <small>NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.</small>	/			
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 with holding times due within 48 hours sample due within 48 hours present?			/	
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? <b>If yes, contact client and note in narrative.</b>		/		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? <small>Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect</small>	/			HCl
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? <small>Record the pH in Comments.</small>			/	
If dissolved metals are requested, were samples field filtered?			/	
<u>Additional Comments (if any):</u>  				
<small><sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.</small>				

UP  
Custodian Printed Name or Initials

[Signature]  
Signature or Initials of Custodian

7:318 1845  
Date/Time



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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH01**  
**1807031-01 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/10/18 08:06

**BH02**  
**1807031-02 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH03**  
**1807031-03 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH04**  
**1807031-04 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH05**  
**1807031-05 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/10/18 08:06

**BH06**  
**1807031-06 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH07**  
**1807031-07 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH08**  
**1807031-08 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/10/18 08:06

**BH12**  
**1807031-09 (Water)**

**Summit Scientific**

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

Date Sampled: **07/03/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1807054	07/06/18	07/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/03/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/10/18 08:06

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

#### Summit Scientific

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

#### Batch 1807054 - EPA 5030 Water MS

##### Blank (1807054-BLK1)

Prepared: 07/06/18 Analyzed: 07/07/18

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.2		93.6	23-173				
Surrogate: Toluene-d8	14.0		"	13.3		105	20-170				
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		100	21-167				

##### LCS (1807054-BS1)

Prepared: 07/06/18 Analyzed: 07/07/18

Benzene	33.3	1.0	ug/l	33.3		99.8	70-130				
Toluene	33.2	1.0	"	33.3		99.5	70-130				
Ethylbenzene	38.2	1.0	"	33.3		114	70-130				
m,p-Xylene	65.6	2.0	"	66.7		98.4	70-130				
o-Xylene	33.1	1.0	"	33.3		99.4	70-130				
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		97.1	23-173				
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170				
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	21-167				

##### Matrix Spike (1807054-MS1)

Source: 1807031-01

Prepared: 07/06/18 Analyzed: 07/07/18

Benzene	33.1	1.0	ug/l	33.3	ND	99.4	70-130				
Toluene	33.4	1.0	"	33.3	ND	100	70-130				
Ethylbenzene	38.4	1.0	"	33.3	ND	115	70-130				
m,p-Xylene	66.4	2.0	"	66.7	ND	99.5	70-130				
o-Xylene	33.8	1.0	"	33.3	ND	101	70-130				
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.2		95.8	23-173				
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170				
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105	21-167				

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/10/18 08:06

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

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

**Batch 1807054 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1807054-MSD1)</b>	<b>Source: 1807031-01</b>			Prepared: 07/06/18		Analyzed: 07/07/18				
Benzene	33.9	1.0	ug/l	33.3	ND	102	70-130	2.21	30	
Toluene	33.8	1.0	"	33.3	ND	101	70-130	1.22	30	
Ethylbenzene	38.3	1.0	"	33.3	ND	115	70-130	0.261	30	
m,p-Xylene	66.2	2.0	"	66.7	ND	99.3	70-130	0.257	30	
o-Xylene	33.3	1.0	"	33.3	ND	99.8	70-130	1.61	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.0</i>		<i>"</i>	<i>13.2</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.7</i>		<i>"</i>	<i>13.3</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>14.3</i>		<i>"</i>	<i>13.3</i>		<i>107</i>	<i>21-167</i>			

Summit Scientific

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

Project: Noble - Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/10/18 08:06

### 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