

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

**FOURTH QUARTER 2016**  
**Analytical Tables, Figures,**  
**and Laboratory Reports**

October 25, 2016

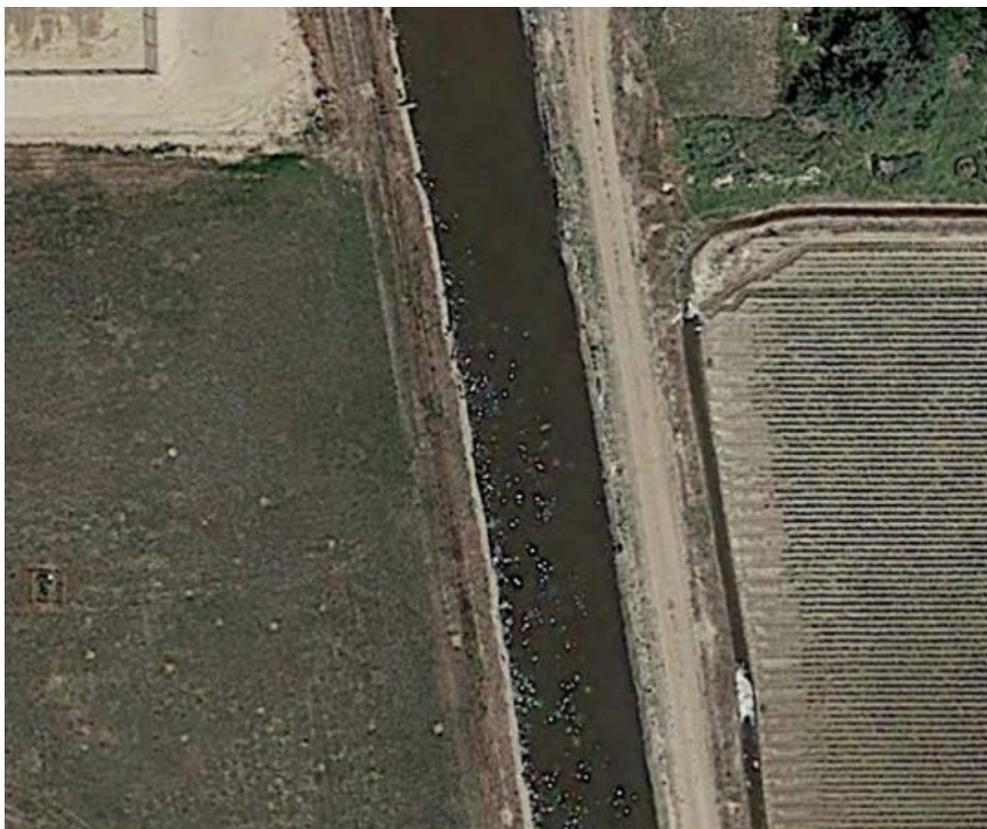


Image: Google

**PREPARED ON BEHALF OF**

Noble Energy, Inc.  
1600 Broadway  
Denver, CO 80202



**PREPARED BY**

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



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

Soil Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Naphthalene (mg/kg)
COGCC Standard		0.17	85	100	175	500		23
BH01@2-4'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH02@1-2.5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH03@1-2'	03/22/16	0.11	1.6	0.68	4.5	170	420	0.22
BH04@1-3'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	0.015
BH05@0-2'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH06@1-2.5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH07@2-3'	03/22/16	0.16	2.3	2.0	14	720	1,200	0.23
BH08@0-1.5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH10@6-7'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH11@4-5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH12@1-2'	07/15/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

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

Soil standards referenced from COGCC Table 910-1

**Highlighted results exceed the COGCC Table 910-1 standard**

**TABLE 2**  
**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 Standard</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
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
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
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
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
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
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
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
BH12	07/15/16	<1.0	<1.0	<1.0	<1.0
BH12	10/03/16	<1.0	<1.0	<1.0	<1.0

COGCC = Colorado Oil and Gas Conservation Commission

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 3**  
**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
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
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
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
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
BH06	03/22/16	4714.67	9.83	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
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
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
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

ft. = Feet

AMSL = Above mean sea level

BTOC = Below top of casing

LNAPL = Light non-aqueous phase liquid

ND = No LNAPL detected

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

**TABLE 4**  
**SURFACE WATER 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 Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
SW01	03/22/16	<1.0	<1.0	<1.0	<1.0
SW02	03/22/16	<1.0	<1.0	<1.0	<1.0
SW03	03/22/16	<1.0	<1.0	<1.0	<1.0

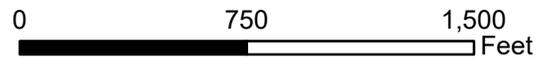
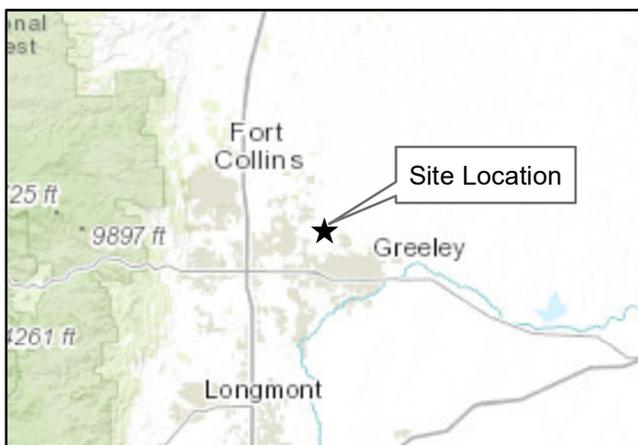
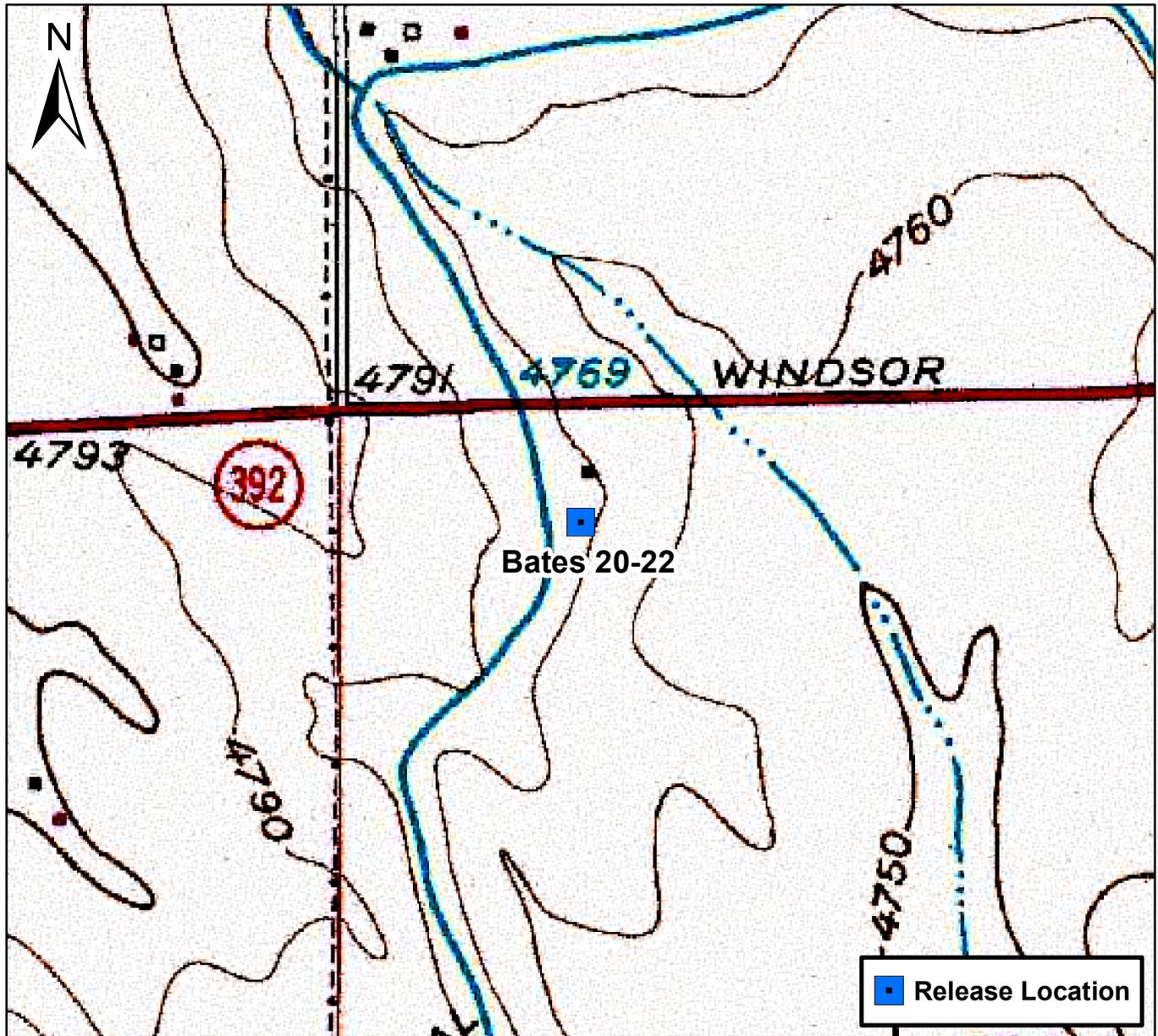
COGCC = Colorado Oil and Gas Conservation Commission

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**



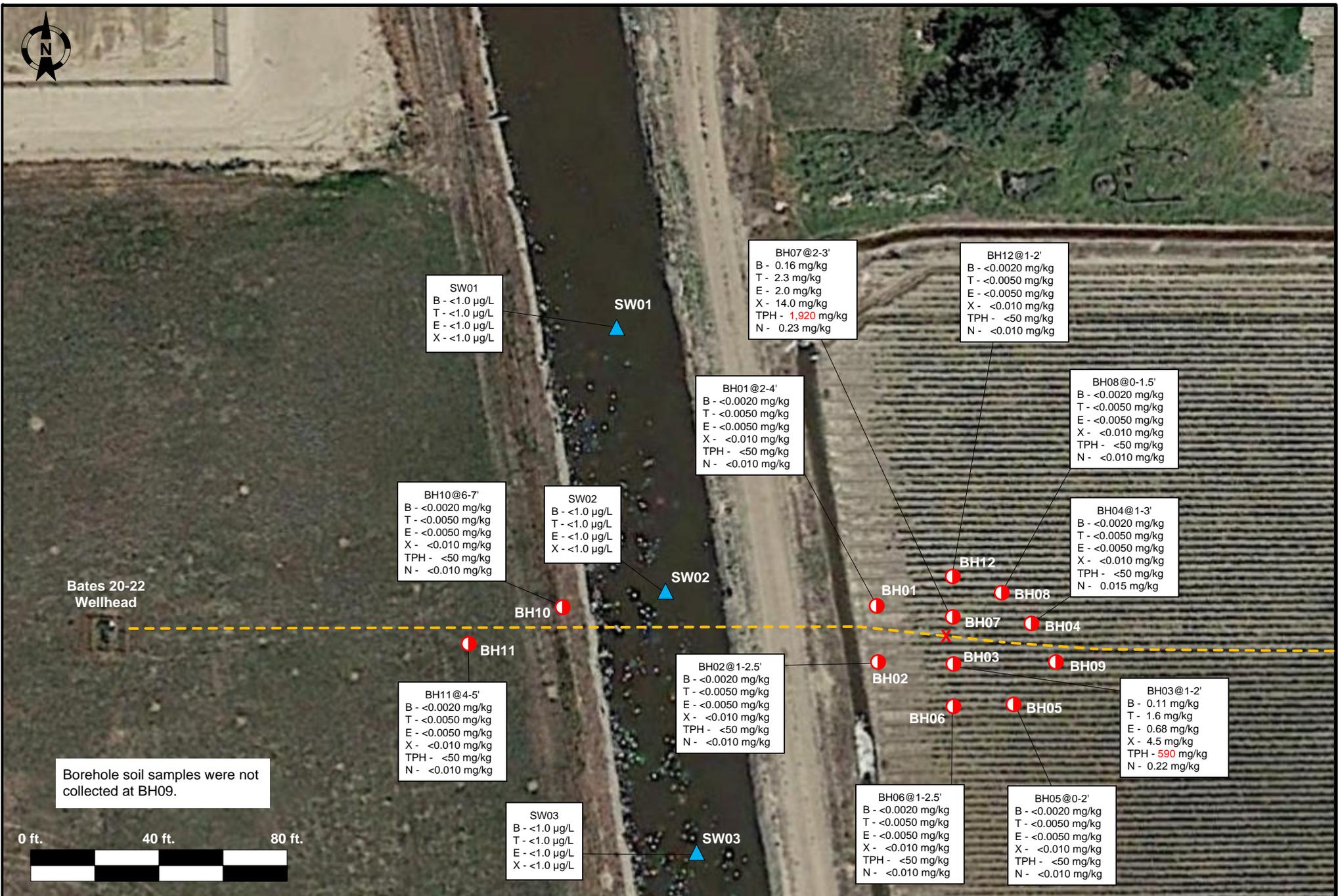
### Figure 1

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





PROJECT NO:		<b>Facility</b> Bates 20-22 Flowline Release Weld County, CO	<b>LEGEND:</b>		 Soil Boring Location (No Monitoring Well Installed)	Site Overview Map  Figure 2
DRAWN BY: JW			 Noble Flow Line	 Groundwater Monitoring Well		
DATE: 07/21/16			 Surface Water Sample Location	 Approximate Release Location		



PROJECT NO:  
DRAWN BY: ESS  
DATE: 07/19/16



**Facility**  
Bates 20-22  
Flowline Release  
Weld County, CO

**LEGEND:**

- Soil Boring and Sampling Location
  - Noble Flow Line
  - Surface Water Sample Location
  - Approximate Release Location
- µg/L Micrograms Per Liter  
mg/kg Milligrams Per Kilogram

B - Benzene  
T - Toluene  
E - Ethylbenzene  
X - Total Xylenes  
TPH - Total Petroleum Hydrocarbons  
N - Naphthalene

Borehole Soil and  
Surface Water Analytical  
Results Map  
(03/22/16 – 07/15/16)

Figure 3



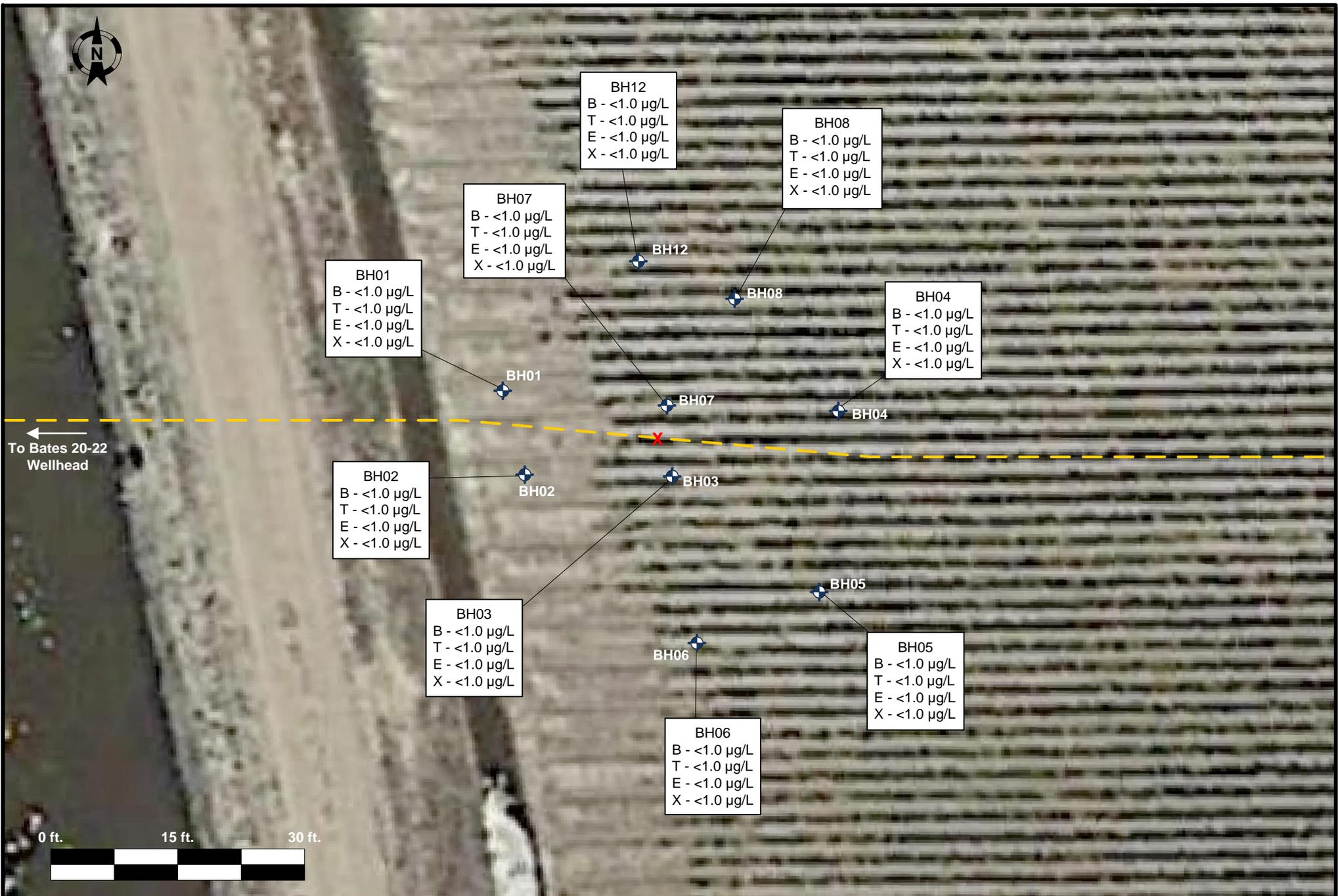
PROJECT NO:  
 DRAWN BY: JW  
 DATE: 10/18/16



**Facility**  
 Bates 20-22  
 Flowline Release  
 Weld County, CO

LEGEND:	
	Noble Flow Line
	Approximate Area of Release
	Groundwater Monitoring Well
	Groundwater Elevation Contour (Dashed where inferred)
	4712.52 Measured Groundwater Elevation
	Flow Direction

Groundwater  
 Potentiometric Surface  
 Contour Map  
 (10/03/16)  
 Figure 4



PROJECT NO:  
DRAWN BY: JW  
DATE: 10/18/16



**Facility**  
Bates 20-22  
Flowline Release  
Weld County, CO

**LEGEND:**  
 Groundwater Monitoring Well  
 Noble Flow Line

$\mu\text{g/L}$  Micrograms Per Liter  
 Approximate Release Location

B - Benzene  
T - Toluene  
E - Ethylbenzene  
X - Total Xylenes

Groundwater Analytical  
Results Map  
(10/0316)  
Figure 5

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 10, 2016

Brandon Bruns  
Tasman Geosciences  
6899 Pecos Street  
Denver, CO 80221  
RE: Bates 20-22

Enclosed are the results of analyses for samples received by Summit Scientific on 10/03/16 16:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1610028-01	Water	10/03/16 12:09	10/03/16 16:35
BH02	1610028-02	Water	10/03/16 12:20	10/03/16 16:35
BH03	1610028-03	Water	10/03/16 12:28	10/03/16 16:35
BH04	1610028-04	Water	10/03/16 12:41	10/03/16 16:35
BH05	1610028-05	Water	10/03/16 12:48	10/03/16 16:35
BH06	1610028-06	Water	10/03/16 12:56	10/03/16 16:35
BH07	1610028-07	Water	10/03/16 13:18	10/03/16 16:35
BH08	1610028-08	Water	10/03/16 13:26	10/03/16 16:35
BH12	1610028-09	Water	10/03/16 14:10	10/03/16 16:35

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  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
10/10/16 11:12

741 Corporate Circle Suite 1 Golden, Colorado 80401  
303-277-9310 303-374-5933 Fax

1610028

Client: Noble/Tasman Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: 303-487-1228 Fax: \_\_\_\_\_  
Sampler Name: Graham Basecke

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail: BBruns@tasman-gco.com  
Project Name: Bates 20-22  
Project Number: \_\_\_\_\_

Page 1 of 1

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	
BH01	10-3-16	1209	3	X											
BH02	10-3-16	1220	3	X											
BH03	10-3-16	1228	3	X											
BH04	10-3-16	1241	3	X											
BH05	10-3-16	1248	3	X											
BH06	10-3-16	1256	3												
BH07	10-3-16	1318	3		X										
BH08	10-3-16	1326	3	X											
BH12	10-3-16	1410	3		X										

Relinquished by: <u>[Signature]</u> Date/Time: <u>10-3-16 1635</u>	Received by: <u>[Signature]</u> Date/Time: <u>10/3/16 1635</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> Standard <input type="checkbox"/>	Notes: <u>on ice</u>
Relinquished by: <u>[Signature]</u> Date/Time: <u>10/3/16 1706</u>	Received in Lab by: _____ Date/Time: _____	Sample Integrity: Temperature Upon Receipt: <u>3.4°C</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

www.summitsci.com



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
10/10/16 11:12

**Sample Receipt Checklist**

S2 Work Order: 11610028  
 Client: Tasman Geo. Client Project ID: Bates 20-22  
 Shipped Via: Pick up (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
 Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler ID					
Temp (°C)	<u>3.4</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Jacob Porter  
Custodian Printed Name

Jmp  
Signature or Initials of Custodian

10/4/16 9:05  
Date/Time



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH01**  
**1610028-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 12:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 12:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH02**  
**1610028-02 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH03**  
**1610028-03 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 12:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 12:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		107 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.3 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.1 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH04**  
**1610028-04 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 12:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 12:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		93.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH05**  
**1610028-05 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.2 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	45-146		"	"	"	"	

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Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH06**  
**1610028-06 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 12:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 12:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %	45-146		"	"	"	"	

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Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH07**  
**1610028-07 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 13:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 13:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		104 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.2 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.7 %	45-146		"	"	"	"	

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Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH08**  
**1610028-08 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>111 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>95.5 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>101 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

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Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

**BH12**  
**1610028-09 (Water)**

**Summit Scientific**

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

Date Sampled: **10/03/16 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1610048	10/07/16	10/07/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/03/16 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %	45-146		"	"	"	"	

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Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
10/10/16 11:12

### 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 1610048 - EPA 5030 Water MS

##### Blank (1610048-BLK1)

Prepared & Analyzed: 10/07/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

##### LCS (1610048-BS1)

Prepared & Analyzed: 10/07/16

Benzene	39.4	1.0	ug/l	33.3		118	51-132			
Toluene	39.6	1.0	"	33.3		119	51-138			
Ethylbenzene	42.0	1.0	"	33.1		127	58-146			
m,p-Xylene	75.7	2.0	"	66.5		114	57-144			
o-Xylene	39.6	1.0	"	32.7		121	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.3		"	13.3		107	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.7	45-146			

##### Matrix Spike (1610048-MS1)

Source: 1610011-01

Prepared & Analyzed: 10/07/16

Benzene	39.7	1.0	ug/l	33.3	ND	119	34-141			
Toluene	40.0	1.0	"	33.3	ND	120	27-151			
Ethylbenzene	43.6	1.0	"	33.1	ND	132	29-160			
m,p-Xylene	77.9	2.0	"	66.5	ND	117	20-166			
o-Xylene	40.7	1.0	"	32.7	ND	125	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		110	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.4	45-146			

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Project Manager: Brandon Brunns

**Reported:**  
10/10/16 11:12

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

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

**Batch 1610048 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1610048-MSD1)</b>	<b>Source: 1610011-01</b>			<b>Prepared &amp; Analyzed: 10/07/16</b>						
Benzene	40.2	1.0	ug/l	33.3	ND	121	34-141	1.33	32	
Toluene	40.7	1.0	"	33.3	ND	122	27-151	1.56	25	
Ethylbenzene	44.6	1.0	"	33.1	ND	135	29-160	2.34	50	
m,p-Xylene	79.7	2.0	"	66.5	ND	120	20-166	2.34	36	
o-Xylene	41.9	1.0	"	32.7	ND	128	33-159	2.95	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.7</i>		<i>"</i>	<i>13.3</i>		<i>110</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.1</i>		<i>"</i>	<i>13.3</i>		<i>98.4</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.6</i>	<i>45-146</i>			

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Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/10/16 11:12

### 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