



SS05@5'  
 B - <0.0020 mg/kg  
 T - <0.0050 mg/kg  
 E - <0.0050 mg/kg  
 X - <0.010 mg/kg  
 TPH - <50 mg/kg  
 N - <0.010 mg/kg

SS02@3'  
 B - <0.0020 mg/kg  
 T - <0.0050 mg/kg  
 E - <0.0050 mg/kg  
 X - <0.010 mg/kg  
 TPH - <50 mg/kg  
 N - <0.010 mg/kg  
 SAR - 0.170  
 EC - 0.573 mmhos/cm  
 pH - 8.10

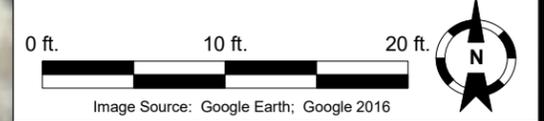
**Legend**

- Excavation Sample Location
- Excavation Sample Location (Not Submitted for Laboratory Analysis)
- Excavation Extent

**Notes**

- 1) Site Coordinates: 40.515377, -104.416386
  - 2) All locations are approximate unless otherwise noted
  - 3) **RED** value indicates concentration greater than COGCC table 910-1 soil standard (see table below).
- GPS – Global Positioning System  
 mg/kg – Milligrams Per Kilogram  
 mmhos/cm – Millimhos Per Centimeter

| Contaminant of Concern            | COGCC Concentration Standard |
|-----------------------------------|------------------------------|
| B - Benzene                       | 0.17 mg/kg                   |
| T - Toluene                       | 85 mg/kg                     |
| E - Ethylbenzene                  | 100 mg/kg                    |
| X – Total Xylenes                 | 175 mg/kg                    |
| TPH- Total Petroleum Hydrocarbons | 500 mg/kg                    |
| N - Naphthalene                   | 23 mg/kg                     |
| SAR – Sodium Absorption Ratio     | <12                          |
| EC – Electrical Conductivity      | <4mmhos/cm or 2x background  |
| pH                                | 6-9                          |



|              |         |
|--------------|---------|
| DATE:        | 11/1/18 |
| DESIGNED BY: | JW      |
| DRAWN BY:    | MG      |



**TASMAN**  
 GEOSCIENCES

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

**Noble Energy, Inc. – DJ Basin**  
**Brown 3-9,10,15,16,23 Vault Removal – Location ID: 302322**  
 NWSE, Section 3, Township 6 North, Range 63 West  
 Weld County, Colorado

Excavation Soil Analytical  
 Results Map  
 (11/1/2018)

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 08, 2018

Brandon Bruns

Tasman Geosciences

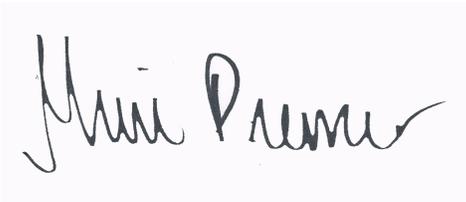
6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Brown 3-9,10,15,16,23

Enclosed are the results of analyses for samples received by Summit Scientific on 11/01/18 17:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M".

Muri Premer For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
11/08/18 09:43

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled   | Date Received  |
|-----------|---------------|--------|----------------|----------------|
| SS02@3'   | 1811007-02    | Soil   | 11/01/18 13:07 | 11/01/18 17:45 |
| SS05@5'   | 1811007-05    | Soil   | 11/01/18 13:13 | 11/01/18 17:45 |

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

1811007

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

Page 1 of 1

Client: Noble/Tasman  
Address: -  
City/State/Zip: -  
Phone: 979-255-4235 Fax: -  
Sampler Name: Max Garza

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail: Bbruns@tasman-geo.com  
Project Name: Brown 3, 9, 10, 15, 16, 23  
Project Number: N/A

| 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 |                      | pH, EC, SAR                                       |
| SS01@3'                     | 11/1/18      | 1305         | 1                    |                                |                                 | X    |                 |             | X                              |  |                 |           |              |          |                      | <p><u>HOLD:</u></p> <p>SS01<br/>SS03<br/>SS04</p> |
| SS02@3'                     | ↓            | 1307         | ↓                    |                                |                                 | ↓    |                 |             |                                |  |                 |           | X            |          |                      |   |
| SS03@3'                     | ↓            | 1309         | ↓                    |                                |                                 | ↓    |                 |             |                                |  |                 |           |              |          |                      |   |
| SS04@3'                     | ↓            | 1311         | ↓                    |                                |                                 | ↓    |                 |             |                                |  |                 |           |              |          |                      |   |
| SS05@3'                     | ↓            | 1313         | ↓                    |                                |                                 | ↓    |                 |             |                                |  |                 |           |              |          |                      |   |
| Relinquished by: <u>Max</u> |              |              |                      | Date/Time: <u>11/1/18 1745</u> | Received by: <u>[Signature]</u> |      |                 |             | Date/Time: <u>11.1.18 1745</u> | Turn Around Time (Check)   |                 |           |              | Notes:   |                      |   |
| Relinquished by:            |              |              |                      | Date/Time:                     | Received by:                    |      |                 |             | Date/Time:                     | Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/><br>24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/><br>48 Hours <input type="checkbox"/> |                 |           |              |          |                      |   |
| Relinquished by:            |              |              |                      | Date/Time:                     | Received in Lab by:             |      |                 |             | Date/Time:                     | Sample Integrity:<br>Temperature Upon Receipt: <u>7.7</u><br>Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>   |                 |           |              |          |                      |   |

1811007

Sample Receipt Checklist

S2 Work Order \_\_\_\_\_

Client: Noble/Tasman Client Project ID: Brown 3-9, 10, 15, 16, 23

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other P.U. Airbill #: \_\_\_\_\_

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

|           |            |
|-----------|------------|
| Temp (°C) | <u>7.7</u> |
|-----------|------------|

Thermometer ID: 61857155-K

|   | Yes                                 | No                       | N/A                                 | Comments (if any) |
|---|-------------------------------------|--------------------------|-------------------------------------|-------------------|
| If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ?<br>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 <sup>(1)</sup> ?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                   |
| Was adequate sample volume provided <sup>(1)</sup> ?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                   |
| If custody seals are present, are they intact <sup>(1)</sup> ?  | <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 <sup>(1)</sup> ?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                   |
| Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                   |
| Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                   |
| Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                   |
| For volatiles in water – is there headspace present? If yes, contact client and note in narrative.  | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |                   |
| Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?<br>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 <sup>(1)</sup> ?<br>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):

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

W  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

11-1-18 1745  
Date/Time



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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
11/08/18 09:43

**SS02@3'**  
**1811007-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/01/18 13:07**

| Analyte                     | Result | Reporting |  | Units | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|-----------------------------|--------|-----------|--|-------|----------|---------|----------|----------|-----------|-------|
|                             |        | Limit     |  |       |          |         |          |          |           |       |
| Benzene                     | ND     | 0.0020    |  | mg/kg | 1        | 1811029 | 11/02/18 | 11/03/18 | EPA 8260B |       |
| Toluene                     | ND     | 0.0050    |  | "     | "        | "       | "        | "        | "         |       |
| Ethylbenzene                | ND     | 0.0050    |  | "     | "        | "       | "        | "        | "         |       |
| Xylenes (total)             | ND     | 0.010     |  | "     | "        | "       | "        | "        | "         |       |
| Naphthalene                 | ND     | 0.010     |  | "     | "        | "       | "        | "        | "         |       |
| Gasoline Range Hydrocarbons | ND     | 50        |  | "     | "        | "       | "        | "        | "         |       |

Date Sampled: **11/01/18 13:07**

| Analyte                          | Result | Reporting |  | Units  | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------|--|--------|----------|-------|----------|----------|--------|-------|
|                                  |        | Limit     |  |        |          |       |          |          |        |       |
| Surrogate: 1,2-Dichloroethane-d4 |        | 132 %     |  | 23-173 |          | "     | "        | "        | "      |       |
| Surrogate: Toluene-d8            |        | 109 %     |  | 20-170 |          | "     | "        | "        | "      |       |
| Surrogate: 4-Bromofluorobenzene  |        | 116 %     |  | 21-167 |          | "     | "        | "        | "      |       |

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/01/18 13:07**

| Analyte       | Result | Reporting |  | Units | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|---------------|--------|-----------|--|-------|----------|---------|----------|----------|-----------|-------|
|               |        | Limit     |  |       |          |         |          |          |           |       |
| C10-C28 (DRO) | ND     | 50        |  | mg/kg | 1        | 1811031 | 11/02/18 | 11/04/18 | EPA 8015M |       |

Date Sampled: **11/01/18 13:07**

| Analyte                | Result | Reporting |  | Units  | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------|--|--------|----------|-------|----------|----------|--------|-------|
|                        |        | Limit     |  |        |          |       |          |          |        |       |
| Surrogate: o-Terphenyl |        | 94.4 %    |  | 30-150 |          | "     | "        | "        | "      |       |

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **11/01/18 13:07**

| Analyte | Result      | Reporting |  | Units     | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|---------|-------------|-----------|--|-----------|----------|---------|----------|----------|-----------|-------|
|         |             | Limit     |  |           |          |         |          |          |           |       |
| Calcium | <b>2810</b> | 11.6      |  | mg/kg dry | 1        | 1811056 | 11/05/18 | 11/05/18 | EPA 6020B |       |

Summit Scientific

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
11/08/18 09:43

**SS02@3'**  
**1811007-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|-----------|--------|-----------------|-----------|----------|---------|----------|----------|-----------|-------|
| Magnesium | 444    | 5.81            | mg/kg dry | 1        | 1811056 | 11/05/18 | 11/05/18 | EPA 6020B |       |
| Sodium    | 36.7   | 5.81            | "         | "        | "       | "        | "        | "         |       |

**Calculated Analysis**

Date Sampled: **11/01/18 13:07**

| Analyte                 | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method      | Notes |
|-------------------------|--------|-----------------|-------|----------|---------|----------|----------|-------------|-------|
| Sodium Adsorption Ratio | 0.170  | 0.100           | units | 1        | 1811104 | 11/07/18 | 11/08/18 | Calculation |       |

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **11/01/18 13:07**

| Analyte  | Result | Reporting Limit | Units    | Dilution | Batch   | Prepared | Analyzed | Method      | Notes |
|----------|--------|-----------------|----------|----------|---------|----------|----------|-------------|-------|
| % Solids | 86.1   |                 | %        | 1        | 1811024 | 11/02/18 | 11/02/18 | Calculation |       |
| pH       | 8.10   |                 | pH Units | "        | 1811073 | 11/06/18 | 11/06/18 | EPA 9045D   |       |

**Specific Conductance by EPA Method 120.1**

Date Sampled: **11/01/18 13:07**

| Analyte                   | Result | Reporting Limit | Units    | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|---------------------------|--------|-----------------|----------|----------|---------|----------|----------|-----------|-------|
| Specific Conductance (EC) | 0.573  | 0.0100          | mmhos/cm | 1        | 1811072 | 11/06/18 | 11/06/18 | EPA 120.1 |       |

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
11/08/18 09:43

**SS05@5'**  
**1811007-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/01/18 13:13**

| Analyte                     | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene                     | ND     | 0.0020          | mg/kg | 1        | 1811029 | 11/02/18 | 11/03/18 | EPA 8260B |       |
| Toluene                     | ND     | 0.0050          | "     | "        | "       | "        | "        | "         |       |
| Ethylbenzene                | ND     | 0.0050          | "     | "        | "       | "        | "        | "         |       |
| Xylenes (total)             | ND     | 0.010           | "     | "        | "       | "        | "        | "         |       |
| Naphthalene                 | ND     | 0.010           | "     | "        | "       | "        | "        | "         |       |
| Gasoline Range Hydrocarbons | ND     | 50              | "     | "        | "       | "        | "        | "         |       |

Date Sampled: **11/01/18 13:13**

| Analyte                          | Result | Reporting Limit | Units  | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 |        | 119 %           | 23-173 |          | "     | "        | "        | "      |       |
| Surrogate: Toluene-d8            |        | 101 %           | 20-170 |          | "     | "        | "        | "      |       |
| Surrogate: 4-Bromofluorobenzene  |        | 117 %           | 21-167 |          | "     | "        | "        | "      |       |

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/01/18 13:13**

| Analyte       | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C10-C28 (DRO) | ND     | 50              | mg/kg | 1        | 1811031 | 11/02/18 | 11/04/18 | EPA 8015M |       |

Date Sampled: **11/01/18 13:13**

| Analyte                | Result | Reporting Limit | Units  | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl |        | 96.9 %          | 30-150 |          | "     | "        | "        | "      |       |

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
11/08/18 09:43

### 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 1811029 - EPA 5030 Soil MS

##### Blank (1811029-BLK1)

Prepared: 11/02/18 Analyzed: 11/03/18

|                                  |        |        |       |        |  |      |        |  |  |  |  |
|----------------------------------|--------|--------|-------|--------|--|------|--------|--|--|--|--|
| Benzene                          | ND     | 0.0020 | mg/kg |        |  |      |        |  |  |  |  |
| Toluene                          | ND     | 0.0050 | "     |        |  |      |        |  |  |  |  |
| Ethylbenzene                     | ND     | 0.0050 | "     |        |  |      |        |  |  |  |  |
| Xylenes (total)                  | ND     | 0.010  | "     |        |  |      |        |  |  |  |  |
| Naphthalene                      | ND     | 0.010  | "     |        |  |      |        |  |  |  |  |
| Gasoline Range Hydrocarbons      | ND     | 50     | "     |        |  |      |        |  |  |  |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0418 |        | "     | 0.0396 |  | 106  | 23-173 |  |  |  |  |
| Surrogate: Toluene-d8            | 0.0394 |        | "     | 0.0400 |  | 98.6 | 20-170 |  |  |  |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0410 |        | "     | 0.0400 |  | 103  | 21-167 |  |  |  |  |

##### LCS (1811029-BS1)

Prepared: 11/02/18 Analyzed: 11/03/18

|                                  |        |        |       |        |  |      |        |  |  |  |  |
|----------------------------------|--------|--------|-------|--------|--|------|--------|--|--|--|--|
| Benzene                          | 0.130  | 0.0020 | mg/kg | 0.150  |  | 86.6 | 70-130 |  |  |  |  |
| Toluene                          | 0.111  | 0.0050 | "     | 0.150  |  | 73.8 | 70-130 |  |  |  |  |
| Ethylbenzene                     | 0.140  | 0.0050 | "     | 0.150  |  | 93.4 | 70-130 |  |  |  |  |
| m,p-Xylene                       | 0.281  | 0.010  | "     | 0.300  |  | 93.8 | 70-130 |  |  |  |  |
| o-Xylene                         | 0.149  | 0.0050 | "     | 0.150  |  | 99.1 | 70-130 |  |  |  |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0398 |        | "     | 0.0396 |  | 101  | 23-173 |  |  |  |  |
| Surrogate: Toluene-d8            | 0.0395 |        | "     | 0.0400 |  | 98.8 | 20-170 |  |  |  |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0411 |        | "     | 0.0400 |  | 103  | 21-167 |  |  |  |  |

##### Matrix Spike (1811029-MS1)

Source: 1810342-01

Prepared: 11/02/18 Analyzed: 11/03/18

|                                  |        |        |       |        |    |      |        |  |  |  |       |
|----------------------------------|--------|--------|-------|--------|----|------|--------|--|--|--|-------|
| Benzene                          | 0.123  | 0.0020 | mg/kg | 0.150  | ND | 81.9 | 70-130 |  |  |  |       |
| Toluene                          | 0.104  | 0.0050 | "     | 0.150  | ND | 69.6 | 70-130 |  |  |  | QM-07 |
| Ethylbenzene                     | 0.127  | 0.0050 | "     | 0.150  | ND | 84.8 | 70-130 |  |  |  |       |
| m,p-Xylene                       | 0.240  | 0.010  | "     | 0.300  | ND | 80.1 | 70-130 |  |  |  |       |
| o-Xylene                         | 0.130  | 0.0050 | "     | 0.150  | ND | 86.3 | 70-130 |  |  |  |       |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0407 |        | "     | 0.0396 |    | 103  | 23-173 |  |  |  |       |
| Surrogate: Toluene-d8            | 0.0376 |        | "     | 0.0400 |    | 94.1 | 20-170 |  |  |  |       |
| Surrogate: 4-Bromofluorobenzene  | 0.0380 |        | "     | 0.0400 |    | 95.1 | 21-167 |  |  |  |       |

Summit Scientific

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
11/08/18 09:43

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

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

**Batch 1811029 - EPA 5030 Soil MS**

| <b>Matrix Spike Dup (1811029-MSD1)</b> | <b>Source: 1810342-01</b> |        |       | Prepared: 11/02/18 Analyzed: 11/03/18 |    |      |        |      |    |       |
|--|---------------------------|--------|-------|---------------------------------------|----|------|--------|------|----|-------|
| Benzene                                | 0.117                     | 0.0020 | mg/kg | 0.150                                 | ND | 77.8 | 70-130 | 5.11 | 30 |       |
| Toluene                                | 0.0977                    | 0.0050 | "     | 0.150                                 | ND | 65.1 | 70-130 | 6.68 | 30 | QM-07 |
| Ethylbenzene                           | 0.121                     | 0.0050 | "     | 0.150                                 | ND | 80.6 | 70-130 | 5.03 | 30 |       |
| m,p-Xylene                             | 0.228                     | 0.010  | "     | 0.300                                 | ND | 76.2 | 70-130 | 5.07 | 30 |       |
| o-Xylene                               | 0.124                     | 0.0050 | "     | 0.150                                 | ND | 82.9 | 70-130 | 4.09 | 30 |       |
| Surrogate: 1,2-Dichloroethane-d4       | 0.0411                    |        | "     | 0.0396                                |    | 104  | 23-173 |      |    |       |
| Surrogate: Toluene-d8                  | 0.0392                    |        | "     | 0.0400                                |    | 97.9 | 20-170 |      |    |       |
| Surrogate: 4-Bromofluorobenzene        | 0.0411                    |        | "     | 0.0400                                |    | 103  | 21-167 |      |    |       |

Summit Scientific

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
11/08/18 09:43

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1811031 - EPA 3550A**

**Blank (1811031-BLK1)**

Prepared: 11/02/18 Analyzed: 11/04/18

C10-C28 (DRO) ND 50 mg/kg

**LCS (1811031-BS1)**

Prepared: 11/02/18 Analyzed: 11/04/18

C10-C28 (DRO) 573 50 mg/kg 500 115 70-130

**Matrix Spike (1811031-MS1)**

**Source: 1811007-02**

Prepared: 11/02/18 Analyzed: 11/04/18

C10-C28 (DRO) 575 50 mg/kg 500 20.4 111 70-130

**Matrix Spike Dup (1811031-MSD1)**

**Source: 1811007-02**

Prepared: 11/02/18 Analyzed: 11/04/18

C10-C28 (DRO) 586 50 mg/kg 500 20.4 113 70-130 1.86 20

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
11/08/18 09:43

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1811056 - General Preparation**

**Blank (1811056-BLK1)**

Prepared & Analyzed: 11/05/18

|           |    |      |           |  |  |  |  |  |  |  |
|-----------|----|------|-----------|--|--|--|--|--|--|--|
| Calcium   | ND | 10.0 | mg/kg wet |  |  |  |  |  |  |  |
| Magnesium | ND | 5.00 | "         |  |  |  |  |  |  |  |
| Sodium    | ND | 5.00 | "         |  |  |  |  |  |  |  |

**LCS (1811056-BS1)**

Prepared & Analyzed: 11/05/18

|           |     |      |           |     |     |        |  |  |  |
|-----------|-----|------|-----------|-----|-----|--------|--|--|--|
| Calcium   | 570 | 10.0 | mg/kg wet | 500 | 114 | 70-130 |  |  |  |
| Magnesium | 564 | 5.00 | "         | 500 | 113 | 70-130 |  |  |  |
| Sodium    | 566 | 5.00 | "         | 500 | 113 | 70-130 |  |  |  |

**Duplicate (1811056-DUP1)**

Source: 1811007-02

Prepared & Analyzed: 11/05/18

|           |      |      |           |      |  |  |      |    |
|-----------|------|------|-----------|------|--|--|------|----|
| Calcium   | 2740 | 11.6 | mg/kg dry | 2810 |  |  | 2.60 | 20 |
| Magnesium | 428  | 5.81 | "         | 444  |  |  | 3.61 | 20 |
| Sodium    | 39.0 | 5.81 | "         | 36.7 |  |  | 6.11 | 20 |

**Matrix Spike (1811056-MS1)**

Source: 1811007-02

Prepared & Analyzed: 11/05/18

|           |      |      |           |     |      |     |        |  |
|-----------|------|------|-----------|-----|------|-----|--------|--|
| Calcium   | 3450 | 11.6 | mg/kg dry | 581 | 2810 | 111 | 70-130 |  |
| Magnesium | 1040 | 5.81 | "         | 581 | 444  | 103 | 70-130 |  |
| Sodium    | 630  | 5.81 | "         | 581 | 36.7 | 102 | 70-130 |  |

**Matrix Spike Dup (1811056-MSD1)**

Source: 1811007-02

Prepared & Analyzed: 11/05/18

|           |      |      |           |     |      |     |        |       |    |
|-----------|------|------|-----------|-----|------|-----|--------|-------|----|
| Calcium   | 3480 | 11.6 | mg/kg dry | 581 | 2810 | 115 | 70-130 | 0.770 | 25 |
| Magnesium | 1050 | 5.81 | "         | 581 | 444  | 105 | 70-130 | 1.39  | 25 |
| Sodium    | 646  | 5.81 | "         | 581 | 36.7 | 105 | 70-130 | 2.62  | 25 |

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
11/08/18 09:43

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 1811024 - General Preparation**

|                                 |      |                           |   |  |  |  |  |  |       |    |  |
|---------------------------------|------|---------------------------|---|--|--|--|--|--|-------|----|--|
| <b>Duplicate (1811024-DUP1)</b> |      | <b>Source: 1811007-02</b> |   |  | <b>Prepared &amp; Analyzed: 11/02/18</b> |  |  |  |       |    |  |
| % Solids                        | 85.9 |                           | % |  | 86.1                                     |  |  |  | 0.231 | 20 |  |

**Batch 1811073 - General Preparation**

|                                 |     |  |          |  |  |  |      |        |      |    |  |
|---------------------------------|-----|--|----------|--|--|--|------|--------|------|----|--|
| <b>LCS (1811073-BS1)</b>        |     | <b>Prepared &amp; Analyzed: 11/06/18</b> |          |  |  |  |      |        |      |    |  |
| pH                              | 9.1 |  | pH Units |  | 9.18                                     |  | 99.3 | 95-105 |      |    |  |
| <b>Duplicate (1811073-DUP1)</b> |     | <b>Source: 1811007-02</b>                |          |  | <b>Prepared &amp; Analyzed: 11/06/18</b> |  |      |        |      |    |  |
| pH                              | 8.2 |  | pH Units |  | 8.1                                      |  |      |        | 1.47 | 20 |  |

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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
11/08/18 09:43

**Specific Conductance by EPA Method 120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1811072 - General Preparation**

**Blank (1811072-BLK1)**

Prepared & Analyzed: 11/06/18

Specific Conductance (EC)      ND      0.0100    mmhos/cm

**LCS (1811072-BS1)**

Prepared & Analyzed: 11/06/18

Specific Conductance (EC)      0.754      0.0100    mmhos/cm      0.750      101      90-110

**Duplicate (1811072-DUP1)**

**Source: 1811047-05**

Prepared & Analyzed: 11/06/18

Specific Conductance (EC)      0.606      0.0100    mmhos/cm      0.558      8.34      20

Summit Scientific



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

Project: Noble - Brown 3-9,10,15,16,23

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
11/08/18 09:43

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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