



11/14/12

## Technical Report for

**XTO Energy**

**PCU 197-36A**

**1203-02**

**Accutest Job Number: D40716**

**Sampling Date: 11/06/12**

### Report to:

KRW Consulting, Inc.  
8000 West 14th Avenue  
Lakewood, CO 80214  
dknudson@krwconsulting.com; jhess@krwconsulting.com;  
crachak@krwconsulting.com; rrasnic@krwconsulting.com;  
ATTN: Dwayne Knudson

**Total number of pages in report: 20**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
**Brad Madadian**  
Laboratory Director

**Client Service contact: Renea Jackson 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

# Table of Contents

-1-

|   |           |
|---|-----------|
| <b>Section 1: Sample Summary .....</b>                      | <b>3</b>  |
| <b>Section 2: Case Narrative/Conformance Summary .....</b>  | <b>4</b>  |
| <b>Section 3: Summary of Hits .....</b>                     | <b>5</b>  |
| <b>Section 4: Sample Results .....</b>                      | <b>6</b>  |
| <b>4.1:</b> D40716-1: CUT 1 DISCRETE AS (1) .....           | 7         |
| <b>4.2:</b> D40716-2: CUT 1 DISCRETE AS (2) .....           | 8         |
| <b>4.3:</b> D40716-3: CUT 1 DISCRETE AS (3) .....           | 9         |
| <b>4.4:</b> D40716-4: CUT 1 DISCRETE AS (4) .....           | 10        |
| <b>4.5:</b> D40716-5: CUT 1 DISCRETE AS (5) .....           | 11        |
| <b>Section 5: Misc. Forms .....</b>                         | <b>12</b> |
| <b>5.1:</b> Chain of Custody .....                          | 13        |
| <b>Section 6: Metals Analysis - QC Data Summaries .....</b> | <b>15</b> |
| <b>6.1:</b> Prep QC MP8857: As .....                        | 16        |



Sample Summary

XTO Energy

Job No: D40716

PCU 197-36A  
Project No: 1203-02

| Sample Number | Collected Date | Time By  | Received | Matrix Code | Type | Client Sample ID      |
|---------------|----------------|----------|----------|-------------|------|-----------------------|
| D40716-1      | 11/06/12       | 11:05 DS | 11/08/12 | SO          | Soil | CUT 1 DISCRETE AS (1) |
| D40716-2      | 11/06/12       | 11:10 DS | 11/08/12 | SO          | Soil | CUT 1 DISCRETE AS (2) |
| D40716-3      | 11/06/12       | 11:15 DS | 11/08/12 | SO          | Soil | CUT 1 DISCRETE AS (3) |
| D40716-4      | 11/06/12       | 11:20 DS | 11/08/12 | SO          | Soil | CUT 1 DISCRETE AS (4) |
| D40716-5      | 11/06/12       | 11:25 DS | 11/08/12 | SO          | Soil | CUT 1 DISCRETE AS (5) |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D40716

**Site:** PCU 197-36A

**Report Date** 11/14/2012 1:23:08 PM

On 11/08/2012, 5 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D40716 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP8857

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40712-1MS, D40712-1SDL, D40712-1MSD were used as the QC samples for the metals analysis.
- The RPD(s) for the MS and MSD recoveries of Arsenic are outside control limits for sample MP8857-S2. High RPD due to possible sample matrix or nonhomogeneity.

### Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN17606

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

## Summary of Hits

Page 1 of 1

**Job Number:** D40716  
**Account:** XTO Energy  
**Project:** PCU 197-36A  
**Collected:** 11/06/12



| Lab Sample ID<br>Analyte | Client Sample ID             | Result/<br>Qual | RL   | MDL | Units | Method      |
|--------------------------|------------------------------|-----------------|------|-----|-------|-------------|
| <b>D40716-1</b>          | <b>CUT 1 DISCRETE AS (1)</b> |                 |      |     |       |             |
| Arsenic                  |                              | 14.0            | 0.11 |     | mg/kg | SW846 6020A |
| <b>D40716-2</b>          | <b>CUT 1 DISCRETE AS (2)</b> |                 |      |     |       |             |
| Arsenic                  |                              | 16.2            | 0.12 |     | mg/kg | SW846 6020A |
| <b>D40716-3</b>          | <b>CUT 1 DISCRETE AS (3)</b> |                 |      |     |       |             |
| Arsenic                  |                              | 14.9            | 0.12 |     | mg/kg | SW846 6020A |
| <b>D40716-4</b>          | <b>CUT 1 DISCRETE AS (4)</b> |                 |      |     |       |             |
| Arsenic                  |                              | 12.7            | 0.11 |     | mg/kg | SW846 6020A |
| <b>D40716-5</b>          | <b>CUT 1 DISCRETE AS (5)</b> |                 |      |     |       |             |
| Arsenic                  |                              | 18.2            | 0.11 |     | mg/kg | SW846 6020A |

Sample Results

Report of Analysis

Report of Analysis

|                          |                       |                        |          |
|--------------------------|-----------------------|------------------------|----------|
| <b>Client Sample ID:</b> | CUT 1 DISCRETE AS (1) | <b>Date Sampled:</b>   | 11/06/12 |
| <b>Lab Sample ID:</b>    | D40716-1              | <b>Date Received:</b>  | 11/08/12 |
| <b>Matrix:</b>           | SO - Soil             | <b>Percent Solids:</b> | 85.3     |
| <b>Project:</b>          | PCU 197-36A           |                        |          |

Metals Analysis

| Analyte | Result | RL   | Units | DF | Prep     | Analyzed By | Method                   | Prep Method              |
|---------|--------|------|-------|----|----------|-------------|--------------------------|--------------------------|
| Arsenic | 14.0   | 0.11 | mg/kg | 5  | 11/09/12 | 11/14/12 JB | SW846 6020A <sup>1</sup> | SW846 3050B <sup>2</sup> |

(1) Instrument QC Batch: MA2996  
(2) Prep QC Batch: MP8857

RL = Reporting Limit

Report of Analysis

**Client Sample ID:** CUT 1 DISCRETE AS (2)  
**Lab Sample ID:** D40716-2  
**Matrix:** SO - Soil  
**Project:** PCU 197-36A

**Date Sampled:** 11/06/12  
**Date Received:** 11/08/12  
**Percent Solids:** 81.4

Metals Analysis

| Analyte | Result | RL   | Units | DF | Prep     | Analyzed By | Method                   | Prep Method              |
|---------|--------|------|-------|----|----------|-------------|--------------------------|--------------------------|
| Arsenic | 16.2   | 0.12 | mg/kg | 5  | 11/09/12 | 11/14/12 JB | SW846 6020A <sup>1</sup> | SW846 3050B <sup>2</sup> |

(1) Instrument QC Batch: MA2996  
(2) Prep QC Batch: MP8857

RL = Reporting Limit



Report of Analysis

|                          |                       |                        |          |
|--------------------------|-----------------------|------------------------|----------|
| <b>Client Sample ID:</b> | CUT 1 DISCRETE AS (3) | <b>Date Sampled:</b>   | 11/06/12 |
| <b>Lab Sample ID:</b>    | D40716-3              | <b>Date Received:</b>  | 11/08/12 |
| <b>Matrix:</b>           | SO - Soil             | <b>Percent Solids:</b> | 83.9     |
| <b>Project:</b>          | PCU 197-36A           |                        |          |

Metals Analysis

| Analyte | Result | RL   | Units | DF | Prep     | Analyzed By | Method                   | Prep Method              |
|---------|--------|------|-------|----|----------|-------------|--------------------------|--------------------------|
| Arsenic | 14.9   | 0.12 | mg/kg | 5  | 11/09/12 | 11/14/12 JB | SW846 6020A <sup>1</sup> | SW846 3050B <sup>2</sup> |

(1) Instrument QC Batch: MA2996  
(2) Prep QC Batch: MP8857

RL = Reporting Limit

Report of Analysis

**Client Sample ID:** CUT 1 DISCRETE AS (4)  
**Lab Sample ID:** D40716-4  
**Matrix:** SO - Soil  
**Project:** PCU 197-36A

**Date Sampled:** 11/06/12  
**Date Received:** 11/08/12  
**Percent Solids:** 87.2

Metals Analysis

| Analyte | Result | RL   | Units | DF | Prep     | Analyzed By | Method                   | Prep Method              |
|---------|--------|------|-------|----|----------|-------------|--------------------------|--------------------------|
| Arsenic | 12.7   | 0.11 | mg/kg | 5  | 11/09/12 | 11/14/12 JB | SW846 6020A <sup>1</sup> | SW846 3050B <sup>2</sup> |

(1) Instrument QC Batch: MA2996  
(2) Prep QC Batch: MP8857

RL = Reporting Limit

Report of Analysis

|                          |                       |                        |          |
|--------------------------|-----------------------|------------------------|----------|
| <b>Client Sample ID:</b> | CUT 1 DISCRETE AS (5) | <b>Date Sampled:</b>   | 11/06/12 |
| <b>Lab Sample ID:</b>    | D40716-5              | <b>Date Received:</b>  | 11/08/12 |
| <b>Matrix:</b>           | SO - Soil             | <b>Percent Solids:</b> | 86.4     |
| <b>Project:</b>          | PCU 197-36A           |                        |          |

Metals Analysis

| Analyte | Result | RL   | Units | DF | Prep     | Analyzed By | Method                   | Prep Method              |
|---------|--------|------|-------|----|----------|-------------|--------------------------|--------------------------|
| Arsenic | 18.2   | 0.11 | mg/kg | 5  | 11/09/12 | 11/14/12 JB | SW846 6020A <sup>1</sup> | SW846 3050B <sup>2</sup> |

(1) Instrument QC Batch: MA2996  
(2) Prep QC Batch: MP8857

RL = Reporting Limit

4.5  
4

## Misc. Forms

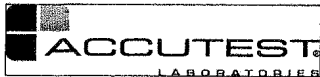
5

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



## CHAIN OF CUSTODY

PAGE 1 OF 1

4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
www.accutest.com

|                   |                              |
|-------------------|------------------------------|
| FED-EX Tracking # | Bottle Order Control #       |
| Accutest Quote #  | Accutest Job # <b>D40716</b> |

| Client / Reporting Information  |                                | Project Information   |  | Requested Analysis (see TEST CODE sheet)  |  |  |   |   |                            |                                     |  |  |                   |  |                      | Matrix Codes  |                   |  |  |
|---|--------------------------------|---|--|---|--|--|---|---|----------------------------|-------------------------------------|--|--|-------------------|--|----------------------|---|-------------------|--|--|
| Company Name<br><b>KRW Consulting</b>   |                                | Project Name<br><b>XTO PCU 197-36A</b>  |  | <b>ARSENIC</b>  |  |  |   |   |                            |                                     |  |  |                   |  |                      | <div>DW - Drinking Water<br/>GW - Ground Water<br/>WW - Water<br/>SW - Surface Water<br/>SO - Soil<br/>SL - Sludge<br/>SED - Sediment<br/>OI - Oil<br/>LIQ - Other Liquid<br/>AIR - Air<br/>SOL - Other Solid<br/>WIP - Wipe<br/>FB-Field Blank<br/>EB-Equipment Blank<br/>RB - Rinse Blank<br/>TB-Trip Blank</div> |                   |  |  |
| Street Address<br><b>8000 West 14th Street, Suite 200</b>   |                                | Street  |  |   |  |  |   |   |                            |                                     |  |  |                   |  |                      |   |                   |  |  |
| City<br><b>Lakewood, CO 80214</b>   |                                | City State  |  |   |  |  |   |   |                            |                                     |  |  |                   |  |                      |   |                   |  |  |
| Project Contact<br><b>Dwayne Knudson</b>  |                                | Project #<br><b>1203-02</b>   |  |   |  |  |   |   |                            |                                     |  |  |                   |  |                      |   |                   |  |  |
| Phone #<br><b>(970) 488-1098</b>  |                                | Client Purchase Order #   |  |   |  |  |   |   |                            |                                     |  |  |                   |  |                      |   |                   |  |  |
| Sampler(s) Name(s)<br><b>DAVID SANDERS</b>  |                                | Project Manager<br><b>Joe Hess</b>  |  | Billing Information (If different from Report to)<br>Company Name<br><b>XTO Energy</b>  |  | Street Address<br><b>21459 CR5</b>   |   | City<br><b>Rifle, CO 81650</b>            |                            | Attention<br><b>Jessica Dooling</b> |  |  |                   |  |                      |   |                   |  |  |
| Accutest Sample #   | Field ID / Point of Collection | MEQ/MDL Viol #  | Collection<br>Date Time Sampled by Matrix # of bottles |   | Number of preserved bottles<br>HCl NaOH HNO3 H2SO4 NONE DI Water MEQ+ ENCORE |  |   |   |                            |                                     |  |  |                   |  |                      |   | LAB USE ONLY      |  |  |
|   | <b>CUT 1 DISCRETE AS (1)</b>   |   | <b>11-6-12</b>   | <b>11:05</b>  | <b>DS</b>  | <b>SO</b>  | <b>1</b>  |   |                            |                                     |  |  |                   |  |                      |   | <b>01</b>         |  |  |
|   | <b>CUT 1 DISCRETE AS (2)</b>   |   | <b>11:10</b>   |   | <b>SO</b>  | <b>1</b>   |   |   |                            |                                     |  |  |                   |  |                      |   | <b>02</b>         |  |  |
|   | <b>CUT 1 DISCRETE AS (3)</b>   |   | <b>11:15</b>   |   | <b>SO</b>  | <b>1</b>   |   |   |                            |                                     |  |  |                   |  |                      |   | <b>03</b>         |  |  |
|   | <b>CUT 1 DISCRETE AS (4)</b>   |   | <b>11:20</b>   |   | <b>SO</b>  | <b>1</b>   |   |   |                            |                                     |  |  |                   |  |                      |   | <b>04</b>         |  |  |
|   | <b>CUT 1 DISCRETE AS (5)</b>   |   | <b>11-6-12</b>   | <b>11:25</b>  | <b>DS</b>  | <b>SO</b>  | <b>1</b>  |   |                            |                                     |  |  |                   |  |                      |   | <b>05</b>         |  |  |
| Turnaround Time (Business days)   |                                | Data Deliverable Information  |  | Comments / Special Instructions   |  |  |   |   |                            |                                     |  |  |                   |  |                      |   |                   |  |  |
| <input type="checkbox"/> Std. 10 Business Days<br><input checked="" type="checkbox"/> Std. 5 Business Days<br><input type="checkbox"/> 6 Day RUSH<br><input type="checkbox"/> 3 Day Emergency<br><input type="checkbox"/> 2 Day Emergency<br><input type="checkbox"/> 1 Day Emergency<br><input type="checkbox"/> Emergency & Rush T/A data available VIA Lablink |                                | Approved By (Accutest PM): / Date:<br>_____<br>_____<br>_____<br>_____<br>_____ |  | <input type="checkbox"/> Commercial "A" (Level 1)<br><input type="checkbox"/> Commercial "B" (Level 2)<br><input type="checkbox"/> COMMBN<br><input type="checkbox"/> COMMBN+<br><input type="checkbox"/> Commercial "A" = Results Only<br>Commercial "B" = Results + QC Summary<br>Commercial BN = Results/QC/Narrative (+ = chromatogram) |  | <input type="checkbox"/> State Forms Required<br><input type="checkbox"/> Send Forms to State<br><input type="checkbox"/> Report by Fax<br><input checked="" type="checkbox"/> Report by PDF ONLY<br><input type="checkbox"/> EDD Format |   | Please Email Results to KRW Piceance Team |                            |                                     |  |  |                   |  |                      |   |                   |  |  |
| Relinquished by Sampler:  |                                | Date Time:  | Received By:   |   | Relinquished By:   |  | Date Time:  |   | Received By:               |                                     | Date Time:   |  | Received By:      |  | Date Time:           |   | Received By:      |  |  |
| 1 <b>1021 ARWINSON</b>  |                                | <b>11/7/12 16:30</b>  | 1 <b>Service Center</b>                                |   | 2 <b>CO</b>  |  | <b>11-8-12 12:30</b>  |   | 3 <b>ARWINSON</b>          |                                     | <b>11-8-12 12:30</b>   |  | 4 <b>ARWINSON</b> |  | <b>11-8-12 12:30</b> |   | 5 <b>ARWINSON</b> |  |  |
| Relinquished by Sampler:  |                                | Date Time:  | Received By:   |   | Relinquished By:   |  | Date Time:  |   | Received By:               |                                     | Date Time:   |  | Received By:      |  | Date Time:           |   | Received By:      |  |  |
| 3   |                                |   | 3  |   | 4  |  |   |   | 4                          |                                     |  |  | 4                 |  |                      |   | 4                 |  |  |
| Relinquished by:  |                                | Date Time:  | Received By:   |   | Custody Seal #   |  | <input checked="" type="checkbox"/> Intact<br><input type="checkbox"/> Not Intact |   | Preserved where applicable |                                     | <input checked="" type="checkbox"/> On Ice<br><input type="checkbox"/> Cooler Temp. <b>4.0</b> |  |                   |  |                      |   |                   |  |  |
| 5   |                                |   | 5  |   |  |  |   |   |                            |                                     |  |  |                   |  |                      |   |                   |  |  |

D40716: Chain of Custody

Page 1 of 2

## Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** D40716

**Client:** KRW CONSULTING

**Immediate Client Services Action Required:** No

**Date / Time Received:** 11/8/2012 12:30:00 PM

**No. Coolers:** 1

**Client Service Action Required at Login:** No

**Project:** XTO PCU 197-36A

**Airbill #'s:** hdco

| <b>Cooler Security</b>    | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |                       | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |
|---------------------------|-------------------------------------|-----------|--------------------------|-----------------------|-------------------------------------|-----------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

| <b>Cooler Temperature</b>    | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |
|------------------------------|-------------------------------------|-----------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Cooler temp verification: |                                     |           | Infrared gun             |
| 3. Cooler media:             |                                     |           | Ice (bag)                |

| <b>Quality Control Preservation</b> | <b>Y</b>                            | <b>or</b> | <b>N</b>                 | <b>N/A</b>                          |
|-------------------------------------|-------------------------------------|-----------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler:     | <input type="checkbox"/>            |           | <input type="checkbox"/> |                                     |
| 2. Trip Blank listed on COC:        | <input type="checkbox"/>            |           | <input type="checkbox"/> |                                     |
| 3. Samples preserved properly:      | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:             | <input type="checkbox"/>            |           | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| <b>Sample Integrity - Documentation</b> | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |
|---|-------------------------------------|-----------|--------------------------|
| 1. Sample labels present on bottles:    | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Container labeling complete:         | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Sample container label / COC agree:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

| <b>Sample Integrity - Condition</b> | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |
|-------------------------------------|-------------------------------------|-----------|--------------------------|
| 1. Sample recvd within HT:          | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. All containers accounted for:    | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Condition of sample:             |                                     |           | Intact                   |

| <b>Sample Integrity - Instructions</b>    | <b>Y</b>                            | <b>or</b> | <b>N</b>                            | <b>N/A</b>                          |
|---|-------------------------------------|-----------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume rec'd for analysis:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments

 Accutest Laboratories  
 V:(303) 425-6021

 4036 Youngfield Street  
 F: (303) 425-6854

 Wheat Ridge, CO  
 www.accutest.com

## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D40716  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8857  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/09/12

| Metal      | RL    | IDL    | MDL   | MB<br>raw | final |
|------------|-------|--------|-------|-----------|-------|
| Aluminum   | 25    | .22    | .31   |           |       |
| Antimony   | 0.20  | .0018  | .0075 |           |       |
| Arsenic    | 0.10  | .006   | .06   | 0.0095    | <0.10 |
| Barium     | 1.0   | .0065  | .037  |           |       |
| Beryllium  | 0.10  | .016   | .09   |           |       |
| Boron      | 20    | 1.2    | 1.2   |           |       |
| Cadmium    | 0.050 | .014   | .021  |           |       |
| Calcium    | 200   | 7.9    | 8     |           |       |
| Chromium   | 1.0   | .033   | .19   |           |       |
| Cobalt     | 0.10  | .0012  | .015  |           |       |
| Copper     | 1.0   | .017   | .065  |           |       |
| Iron       | 20    | .8     | 5     |           |       |
| Lead       | 0.25  | .0011  | .024  |           |       |
| Magnesium  | 50    | .44    | .85   |           |       |
| Manganese  | 0.50  | .0043  | .02   |           |       |
| Molybdenum | 0.50  | .018   | .018  |           |       |
| Nickel     | 1.0   | .0049  | .011  |           |       |
| Phosphorus | 30    | 1.4    | 3.6   |           |       |
| Potassium  | 100   | 9.8    | 10    |           |       |
| Selenium   | 0.20  | .029   | .14   |           |       |
| Silver     | 0.050 | .0009  | .0065 |           |       |
| Sodium     | 250   | 1.5    | 2.3   |           |       |
| Strontium  | 10    | .036   | .036  |           |       |
| Thallium   | 0.10  | .00095 | .0095 |           |       |
| Tin        | 5.0   | .023   | .34   |           |       |
| Titanium   | 1.0   | .044   | .1    |           |       |
| Uranium    | 0.25  | .00085 | .001  |           |       |
| Vanadium   | 2.0   | .12    | .21   |           |       |
| Zinc       | 5.0   | .033   | .35   |           |       |

Associated samples MP8857: D40716-1, D40716-2, D40716-3, D40716-4, D40716-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40716  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8857  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/09/12

| Metal      | D40712-1<br>Original MS | Spikelot<br>ICPALL2 | % Rec | QC<br>Limits |
|------------|-------------------------|---------------------|-------|--------------|
| Aluminum   |                         |                     |       |              |
| Antimony   |                         |                     |       |              |
| Arsenic    | 9.6                     | 111                 | 119   | 85.4         |
| Barium     |                         |                     |       | 75-125       |
| Beryllium  |                         |                     |       |              |
| Boron      |                         |                     |       |              |
| Cadmium    |                         |                     |       |              |
| Calcium    |                         |                     |       |              |
| Chromium   |                         |                     |       |              |
| Cobalt     |                         |                     |       |              |
| Copper     |                         |                     |       |              |
| Iron       |                         |                     |       |              |
| Lead       |                         |                     |       |              |
| Magnesium  |                         |                     |       |              |
| Manganese  |                         |                     |       |              |
| Molybdenum |                         |                     |       |              |
| Nickel     |                         |                     |       |              |
| Phosphorus |                         |                     |       |              |
| Potassium  |                         |                     |       |              |
| Selenium   |                         |                     |       |              |
| Silver     |                         |                     |       |              |
| Sodium     |                         |                     |       |              |
| Strontium  |                         |                     |       |              |
| Thallium   |                         |                     |       |              |
| Tin        |                         |                     |       |              |
| Titanium   |                         |                     |       |              |
| Uranium    |                         |                     |       |              |
| Vanadium   |                         |                     |       |              |
| Zinc       |                         |                     |       |              |

Associated samples MP8857: D40716-1, D40716-2, D40716-3, D40716-4, D40716-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40716  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8857  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/09/12

| Metal      | D40712-1<br>Original | MSD | Spikelot<br>ICPALL2 | % Rec | MSD<br>RPD | QC<br>Limit |
|------------|----------------------|-----|---------------------|-------|------------|-------------|
| Aluminum   |                      |     |                     |       |            |             |
| Antimony   |                      |     |                     |       |            |             |
| Arsenic    | 9.6                  | 137 | 121                 | 105.2 | 21.0 (a)   | 20          |
| Barium     |                      |     |                     |       |            |             |
| Beryllium  |                      |     |                     |       |            |             |
| Boron      |                      |     |                     |       |            |             |
| Cadmium    |                      |     |                     |       |            |             |
| Calcium    |                      |     |                     |       |            |             |
| Chromium   |                      |     |                     |       |            |             |
| Cobalt     |                      |     |                     |       |            |             |
| Copper     |                      |     |                     |       |            |             |
| Iron       |                      |     |                     |       |            |             |
| Lead       |                      |     |                     |       |            |             |
| Magnesium  |                      |     |                     |       |            |             |
| Manganese  |                      |     |                     |       |            |             |
| Molybdenum |                      |     |                     |       |            |             |
| Nickel     |                      |     |                     |       |            |             |
| Phosphorus |                      |     |                     |       |            |             |
| Potassium  |                      |     |                     |       |            |             |
| Selenium   |                      |     |                     |       |            |             |
| Silver     |                      |     |                     |       |            |             |
| Sodium     |                      |     |                     |       |            |             |
| Strontium  |                      |     |                     |       |            |             |
| Thallium   |                      |     |                     |       |            |             |
| Tin        |                      |     |                     |       |            |             |
| Titanium   |                      |     |                     |       |            |             |
| Uranium    |                      |     |                     |       |            |             |
| Vanadium   |                      |     |                     |       |            |             |
| Zinc       |                      |     |                     |       |            |             |

Associated samples MP8857: D40716-1, D40716-2, D40716-3, D40716-4, D40716-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested  
(a) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40716  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8857  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/09/12

| Metal      | BSP<br>Result | Spikelot<br>ICPALL2 | % Rec | QC<br>Limits |
|------------|---------------|---------------------|-------|--------------|
| Aluminum   |               |                     |       |              |
| Antimony   |               |                     |       |              |
| Arsenic    | 103           | 100                 | 103.0 | 80-120       |
| Barium     |               |                     |       |              |
| Beryllium  |               |                     |       |              |
| Boron      |               |                     |       |              |
| Cadmium    |               |                     |       |              |
| Calcium    |               |                     |       |              |
| Chromium   |               |                     |       |              |
| Cobalt     |               |                     |       |              |
| Copper     |               |                     |       |              |
| Iron       |               |                     |       |              |
| Lead       |               |                     |       |              |
| Magnesium  |               |                     |       |              |
| Manganese  |               |                     |       |              |
| Molybdenum |               |                     |       |              |
| Nickel     |               |                     |       |              |
| Phosphorus |               |                     |       |              |
| Potassium  |               |                     |       |              |
| Selenium   |               |                     |       |              |
| Silver     |               |                     |       |              |
| Sodium     |               |                     |       |              |
| Strontium  |               |                     |       |              |
| Thallium   |               |                     |       |              |
| Tin        |               |                     |       |              |
| Titanium   |               |                     |       |              |
| Uranium    |               |                     |       |              |
| Vanadium   |               |                     |       |              |
| Zinc       |               |                     |       |              |

Associated samples MP8857: D40716-1, D40716-2, D40716-3, D40716-4, D40716-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D40716  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 197-36A

QC Batch ID: MP8857  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: ug/l

Prep Date: 11/09/12

| Metal      | D40712-1<br>Original SDL 5:25 %DIF |      |     | QC<br>Limits |
|------------|------------------------------------|------|-----|--------------|
| Aluminum   |                                    |      |     |              |
| Antimony   |                                    |      |     |              |
| Arsenic    | 82.6                               | 82.5 | 0.1 | 0-10         |
| Barium     |                                    |      |     |              |
| Beryllium  |                                    |      |     |              |
| Boron      |                                    |      |     |              |
| Cadmium    |                                    |      |     |              |
| Calcium    |                                    |      |     |              |
| Chromium   |                                    |      |     |              |
| Cobalt     |                                    |      |     |              |
| Copper     |                                    |      |     |              |
| Iron       |                                    |      |     |              |
| Lead       |                                    |      |     |              |
| Magnesium  |                                    |      |     |              |
| Manganese  |                                    |      |     |              |
| Molybdenum |                                    |      |     |              |
| Nickel     |                                    |      |     |              |
| Phosphorus |                                    |      |     |              |
| Potassium  |                                    |      |     |              |
| Selenium   |                                    |      |     |              |
| Silver     |                                    |      |     |              |
| Sodium     |                                    |      |     |              |
| Strontium  |                                    |      |     |              |
| Thallium   |                                    |      |     |              |
| Tin        |                                    |      |     |              |
| Titanium   |                                    |      |     |              |
| Uranium    |                                    |      |     |              |
| Vanadium   |                                    |      |     |              |
| Zinc       |                                    |      |     |              |

Associated samples MP8857: D40716-1, D40716-2, D40716-3, D40716-4, D40716-5

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (anr) Analyte not requested