



11/12/12

## Technical Report for

**XTO Energy**

**PCU 296-5A**

**1210-04**

**Accutest Job Number: D40539**

**Sampling Date: 11/01/12**

### Report to:

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ATTN: Dwayne Knudson

**Total number of pages in report: 22**



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)

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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> D40539-1: BACKGROUND AS (1) .....	7
<b>4.2:</b> D40539-2: BACKGROUND AS (2) .....	8
<b>4.3:</b> D40539-3: BACKGROUND AS (3) .....	9
<b>4.4:</b> D40539-4: BACKGROUND AS (4) .....	10
<b>4.5:</b> D40539-5: BACKGROUND AS (5) .....	11
<b>4.6:</b> D40539-6: BACKGROUND AS (6) .....	12
<b>4.7:</b> D40539-7: BACKGROUND AS (7) .....	13
<b>4.8:</b> D40539-8: BACKGROUND AS (8) .....	14
<b>Section 5: Misc. Forms .....</b>	<b>15</b>
<b>5.1:</b> Chain of Custody .....	16
<b>Section 6: Metals Analysis - QC Data Summaries .....</b>	<b>17</b>
<b>6.1:</b> Prep QC MP8824: As .....	18



Sample Summary

XTO Energy

Job No: D40539

PCU 296-5A  
Project No: 1210-04

Sample Number	Collected			Received	Matrix		Client Sample ID
	Date	Time	By		Code	Type	
D40539-1	11/01/12	13:00	DS	11/03/12	SO	Soil	BACKGROUND AS (1)
D40539-2	11/01/12	13:05	DS	11/03/12	SO	Soil	BACKGROUND AS (2)
D40539-3	11/01/12	13:10	DS	11/03/12	SO	Soil	BACKGROUND AS (3)
D40539-4	11/01/12	13:15	DS	11/03/12	SO	Soil	BACKGROUND AS (4)
D40539-5	11/01/12	13:20	DS	11/03/12	SO	Soil	BACKGROUND AS (5)
D40539-6	11/01/12	13:25	DS	11/03/12	SO	Soil	BACKGROUND AS (6)
D40539-7	11/01/12	13:30	DS	11/03/12	SO	Soil	BACKGROUND AS (7)
D40539-8	11/01/12	13:35	DS	11/03/12	SO	Soil	BACKGROUND AS (8)

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



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D40539

**Site:** PCU 296-5A

**Report Date** 11/12/2012 8:31:07 AM

On 11/03/2012, 8 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 1.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D40539 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:** MP8824

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40540-1MS, D40540-1MSD, D40540-1SDL were used as the QC samples for the metals analysis.

### Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN17541

- 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:** D40539  
**Account:** XTO Energy  
**Project:** PCU 296-5A  
**Collected:** 11/01/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>D40539-1</b>	<b>BACKGROUND AS (1)</b>					
Arsenic		4.5	0.11		mg/kg	SW846 6020A
<b>D40539-2</b>	<b>BACKGROUND AS (2)</b>					
Arsenic		4.6	0.12		mg/kg	SW846 6020A
<b>D40539-3</b>	<b>BACKGROUND AS (3)</b>					
Arsenic		3.6	0.12		mg/kg	SW846 6020A
<b>D40539-4</b>	<b>BACKGROUND AS (4)</b>					
Arsenic		6.3	0.12		mg/kg	SW846 6020A
<b>D40539-5</b>	<b>BACKGROUND AS (5)</b>					
Arsenic		11.9	0.11		mg/kg	SW846 6020A
<b>D40539-6</b>	<b>BACKGROUND AS (6)</b>					
Arsenic		6.5	0.11		mg/kg	SW846 6020A
<b>D40539-7</b>	<b>BACKGROUND AS (7)</b>					
Arsenic		6.0	0.12		mg/kg	SW846 6020A
<b>D40539-8</b>	<b>BACKGROUND AS (8)</b>					
Arsenic		6.1	0.12		mg/kg	SW846 6020A

Sample Results

Report of Analysis

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (1)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-1	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	90.5
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.5	0.11	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (2)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-2	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	86.2
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.6	0.12	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit



Report of Analysis

**Client Sample ID:** BACKGROUND AS (3)  
**Lab Sample ID:** D40539-3  
**Matrix:** SO - Soil  
**Project:** PCU 296-5A

**Date Sampled:** 11/01/12  
**Date Received:** 11/03/12  
**Percent Solids:** 86.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	3.6	0.12	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (4)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-4	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	86.5
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.3	0.12	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (5)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-5	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.3
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	11.9	0.11	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (6)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-6	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	85.2
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.5	0.11	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

4.6  
4

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (7)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-7	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	86.9
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.0	0.12	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BACKGROUND AS (8)	<b>Date Sampled:</b>	11/01/12
<b>Lab Sample ID:</b>	D40539-8	<b>Date Received:</b>	11/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	86.8
<b>Project:</b>	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.1	0.12	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2981  
(2) Prep QC Batch: MP8824

RL = Reporting Limit

## Misc. Forms

5

### Custody Documents and Other Forms

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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>D40539</b>
Requested Analysis (see TEST CODE sheet)	
Matrix Codes	
DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WVP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
LAB USE ONLY	

Client / Reporting Information		Project Information														
Company Name <b>KRW Consulting</b>	Project Name <b>X70 PCU 296 - SA</b>															
Street Address <b>8000 West 14th Street; Suite 200</b>	Street <b>Lakewood, CO 80214</b>															
City <b>Lakewood, CO 80214</b>	City <b>Lakewood, CO 80214</b>															
Project Contact <b>Dwayne Knudson</b>	Project # <b>1210-04</b>															
Phone # <b>(970) 488-1098</b>	Client Purchase Order #															
Sampler(s) Name(s) <b>DAVID SANDERS</b>	Project Manager <b>Joe Hess</b>															
	Attention: <b>Jessica Dooling</b>															
Field ID / Point of Collection	MECH/DI Val #	Date	Time	Sampled by	Matrix	# of bottles	PCU	NaOH	PHOS	NO3	NO2	NO	DI Water	ENCORE	LAB USE ONLY	
BACKGROUND AS (1)		11-1-12	13:00	AS	SO	1										01
BACKGROUND AS (2)			13:05		SO	1										02
BACKGROUND AS (3)			13:10		SO	1										03
BACKGROUND AS (4)			13:15		SO	1										04
BACKGROUND AS (5)			13:20		SO	1										05
BACKGROUND AS (6)			13:25		SO	1										06
BACKGROUND AS (7)			13:30		SO	1										07
BACKGROUND AS (8)		11-1-12	13:35	AS	SO	1										08
Turnaround Time (Business days)		Date Deliverable Information		Comments / Special Instructions												
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 5 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency Emergency & Rush T/A data available VIA Lablink		Approved By (Accutest PM): Date: _____ _____		Please Email Results to KRW Piceance Team												
		Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> COMMBN <input type="checkbox"/> COMMBN+ Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results + QC Narrative (i.e. chromatograms)		<input type="checkbox"/> State Forms Required <input type="checkbox"/> Send Forms to State <input type="checkbox"/> Report by Fax <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> EDO Format												
Sample Custody (to be documented below each time samples change possession, including courier delivery).																
Relinquished by Sampler: <b>1 David Anderson</b>	Date/Time: <b>11/2/12 16:30</b>	Received By: <b>KRW Service Center</b>	Relinquished By: <b>2</b>	Date/Time:	Received By: <b>2</b>											
Relinquished by Sampler: <b>3</b>	Date/Time:	Received By: <b>3</b>	Relinquished By: <b>4</b>	Date/Time:	Received By: <b>4</b>											
Relinquished by: <b>5</b>	Date/Time:	Received By: <b>5</b>	Custody Seal # <b>FED Ex</b>	Intact <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. <b>1.2</b>											

D40539: Chain of Custody

Page 1 of 1



## 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: D40539  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP8824  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/06/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.011	<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 MP8824: D40539-1, D40539-2, D40539-3, D40539-4, D40539-5, D40539-6, D40539-7, D40539-8

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: D40539  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP8824  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/06/12

Metal	D40540-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	2.0	109	98.5	108.6	75-125
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 MP8824: D40539-1, D40539-2, D40539-3, D40539-4, D40539-5, D40539-6, D40539-7, D40539-8

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: D40539  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP8824  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/06/12

Metal	D40540-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	2.0	113	99.5	111.6	3.6	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 MP8824: D40539-1, D40539-2, D40539-3, D40539-4, D40539-5, D40539-6, D40539-7, D40539-8

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40539  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP8824  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 11/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	107	100	107.0	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 MP8824: D40539-1, D40539-2, D40539-3, D40539-4, D40539-5, D40539-6, D40539-7, D40539-8

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

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D40539  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP8824  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: ug/l

Prep Date: 11/06/12

Metal	D40540-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	20.2	20.9	3.3	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 MP8824: D40539-1, D40539-2, D40539-3, D40539-4, D40539-5, D40539-6, D40539-7, D40539-8

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