



11/19/13

Technical Report for

XTO Energy

XTO Love Ranch 8

1108-07A

Accutest Job Number: D31748A

Sampling Date: 02/08/12

Report to:

dknudson@krwconsulting.com

Total number of pages in report: 67



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

A handwritten signature in black ink, appearing to read 'Scott Heideman'.

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D31748A

XTO Love Ranch 8
Project No: 1108-07A

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D31748-2	02/08/12	11:00	CB	02/09/12	SO	Sludge	FRESHWATER PIT CONTENTS
D31748-2A	02/08/12	11:00	CB	02/09/12	SO	Sludge	FRESHWATER PIT CONTENTS

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D31748A

Site: XTO Love Ranch 8

Report Date 11/18/2013 4:53:18 PM

On 02/09/2012, 1 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 D31748A 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.

Volatiles by GCMS By Method SW846 8260B

Matrix SO

Batch ID: V5V1160

- All samples were analyzed within the recommended method holding time.
- Sample(s) D31779-1MS, D31779-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP5346

- All samples were extracted 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) D31778-1MS, D31778-1MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery(s) of Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Pyrene, Naphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- The matrix spike duplicate (MSD) recovery(s) of Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Pyrene are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Fluorene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- The RPD(s) for the MS and MSD recoveries of Naphthalene are outside control limits for sample OP5346-MSD. Probable cause due to sample homogeneity.
- OP5346-MS: Recoveries outside control limits due to dilution.
- OP5346-MSD: Recoveries outside control limits due to dilution.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB839

- All samples were analyzed within the recommended method holding time.
- Sample(s) D31833-1MS, D31833-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31748-2 have surrogates outside control limits. Probable cause due to matrix interference.
- D31748-2 for 1,2,4 Trichlorobenzene: Outside control limits due to possible matrix interference.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP5339

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D31747-1MS, D31747-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP6835

- 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) D31748-1AMS, D31748-1AMSD were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP6825

- 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) D31737-4SDL, D31737-4MS, D31737-4MSD, D31737-4SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Lead, Zinc are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Zinc, Lead are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Barium, Lead are outside control limits for sample MP6825-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Cadmium, Selenium, Silver, Zinc are outside control limits for sample MP6825-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP6825-SD1 for Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP6826

- 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) D31737-4MS, D31737-4MSD, D31737-4SDL were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Arsenic are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP6826-SD1. Probable cause due to sample homogeneity.
- MP6826-SD1 for Arsenic: Serial dilution indicates possible matrix interference.

Metals By Method SW846 7471B

Matrix SO	Batch ID: MP6837
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- 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) D31748-1MS, D31748-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO	Batch ID: GN13639
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- The data for ASTM D1498-76M meets quality control requirements.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN13658
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- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO	Batch ID: R11808
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- The data for SW846 3060/7196A M meets quality control requirements.
- D31748-2 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: M:GP14155
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- The data for SW846 3060A/7196A meets quality control requirements.
- D31748-2 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO	Batch ID: MP6835
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- D31748-2A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

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

Job Number: D31748A
Account: XTO Energy
Project: XTO Love Ranch 8
Collected: 02/08/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D31748-2 FRESHWATER PIT CONTENTS

Benzene	0.939	0.25	0.11	mg/kg	SW846 8260B
Toluene	11.1	0.50	0.25	mg/kg	SW846 8260B
Ethylbenzene	2.98	0.50	0.13	mg/kg	SW846 8260B
Xylene (total)	68.8	1.0	0.50	mg/kg	SW846 8260B
Fluorene	3.14	0.24	0.20	mg/kg	SW846 8270C BY SIM
Naphthalene	5.67	0.24	0.22	mg/kg	SW846 8270C BY SIM
TPH-GRO (C6-C10)	489	25	13	mg/kg	SW846 8015B
TPH-DRO (C10-C28)	16400	240	150	mg/kg	SW846-8015B
Arsenic	4.9	0.72		mg/kg	SW846 6020A
Barium	1840	1.8		mg/kg	SW846 6010C
Chromium	39.8	1.8		mg/kg	SW846 6010C
Copper	28.2	1.8		mg/kg	SW846 6010C
Lead	18.7	9.0		mg/kg	SW846 6010C
Mercury	0.24	0.18		mg/kg	SW846 7471B
Nickel	19.0	5.4		mg/kg	SW846 6010C
Zinc	71.1	5.4		mg/kg	SW846 6010C
Chromium, Trivalent ^a	39.3	2.5		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	99.0			mv	ASTM D1498-76M
Specific Conductivity	2450	1.0		umhos/cm	DEPT.OF AG, BOOK N9
pH	7.85			su	SW846 9045C

D31748-2A FRESHWATER PIT CONTENTS

Calcium	155	2.0		mg/l	SW846 6010C
Magnesium	22.0	1.0		mg/l	SW846 6010C
Sodium	277	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	5.51			ratio	USDA HANDBOOK 60

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

(b) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FRESHWATER PIT CONTENTS	Date Sampled:	02/08/12
Lab Sample ID:	D31748-2	Date Received:	02/09/12
Matrix:	SO - Sludge	Percent Solids:	56.4
Method:	SW846 8260B		
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V19420.D	1	02/12/12	BR	n/a	n/a	V5V1160
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	50.0 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.939	0.25	0.11	mg/kg	
108-88-3	Toluene	11.1	0.50	0.25	mg/kg	
100-41-4	Ethylbenzene	2.98	0.50	0.13	mg/kg	
1330-20-7	Xylene (total)	68.8	1.0	0.50	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	75%		61-130%
460-00-4	4-Bromofluorobenzene	91%		53-131%
17060-07-0	1,2-Dichloroethane-D4	75%		62-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FRESHWATER PIT CONTENTS	Date Sampled:	02/08/12
Lab Sample ID:	D31748-2	Date Received:	02/09/12
Matrix:	SO - Sludge	Percent Solids:	56.4
Method:	SW846 8270C BY SIM SW846 3546		
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07996.D	20	02/16/12	DC	02/13/12	OP5346	E3G317
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.24	0.19	mg/kg	
120-12-7	Anthracene	ND	0.24	0.21	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.59	0.31	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.59	0.42	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.59	0.44	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.59	0.26	mg/kg	
218-01-9	Chrysene	ND	0.59	0.26	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.59	0.44	mg/kg	
206-44-0	Fluoranthene	ND	0.24	0.24	mg/kg	
86-73-7	Fluorene	3.14	0.24	0.20	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.71	0.65	mg/kg	
91-20-3	Naphthalene	5.67	0.24	0.22	mg/kg	
129-00-0	Pyrene	ND	0.24	0.22	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	139%		10-145%
321-60-8	2-Fluorobiphenyl	78%		10-130%
1718-51-0	Terphenyl-d14	115%		22-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	FRESHWATER PIT CONTENTS	
Lab Sample ID:	D31748-2	Date Sampled: 02/08/12
Matrix:	SO - Sludge	Date Received: 02/09/12
Method:	SW846 8015B	Percent Solids: 56.4
Project:	XTO Love Ranch 8	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14882.D	1	02/14/12	SK	n/a	n/a	GGB839
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	489	25	13	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	180% ^a		60-140%		

(a) Outside control limits due to possible matrix interference.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	FRESHWATER PIT CONTENTS					Date Sampled:	02/08/12
Lab Sample ID:	D31748-2					Date Received:	02/09/12
Matrix:	SO - Sludge					Percent Solids:	56.4
Method:	SW846-8015B SW846 3546						
Project:	XTO Love Ranch 8						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH001285.D	10	02/14/12	TR	02/10/12	OP5339	GFH56
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	16400	240	150	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	82%		43-136%		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FRESHWATER PIT CONTENTS

Lab Sample ID: D31748-2

Matrix: SO - Sludge

Project: XTO Love Ranch 8

Date Sampled: 02/08/12

Date Received: 02/09/12

Percent Solids: 56.4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.9	0.72	mg/kg	5	02/10/12	02/14/12 GJ	SW846 6020A ³	SW846 3050B ⁵
Barium	1840	1.8	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.8	1.8	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Chromium	39.8	1.8	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Copper	28.2	1.8	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Lead	18.7	9.0	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Mercury	0.24	0.18	mg/kg	1	02/13/12	02/13/12 MC	SW846 7471B ²	SW846 7471B ⁶
Nickel	19.0	5.4	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 9.0	9.0	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 5.4	5.4	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Zinc	71.1	5.4	mg/kg	1	02/10/12	02/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA2177

(2) Instrument QC Batch: MA2179

(3) Instrument QC Batch: MA2181

(4) Prep QC Batch: MP6825

(5) Prep QC Batch: MP6826

(6) Prep QC Batch: MP6837

RL = Reporting Limit

Report of Analysis

Client Sample ID: FRESHWATER PIT CONTENTS**Lab Sample ID:** D31748-2**Matrix:** SO - Sludge**Project:** XTO Love Ranch 8**Date Sampled:** 02/08/12**Date Received:** 02/09/12**Percent Solids:** 56.4**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.69	0.69	mg/kg	1	02/14/12 15:16	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	39.3	2.5	mg/kg	1	02/14/12 15:16	AMA	SW846 3060/7196A M
Redox Potential Vs H2	99.0		mv	1	02/10/12	JD	ASTM D1498-76M
Solids, Percent	56.4		%	1	02/13/12	SWT	SM19 2540B M
Specific Conductivity	2450	1.0	umhos/cm	1	02/14/12	CJ	DEPT.OF AG, BOOK N9
pH	7.85		su	1	02/09/12 14:40	CT	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: FRESHWATER PIT CONTENTS
Lab Sample ID: D31748-2A
Matrix: SO - Sludge
Project: XTO Love Ranch 8

Date Sampled: 02/08/12
Date Received: 02/09/12
Percent Solids: 56.4

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	155	2.0	mg/l	1	02/10/12	02/10/12 JB	SW846 6010C ¹	EPA 200.7 ²
Magnesium	22.0	1.0	mg/l	1	02/10/12	02/10/12 JB	SW846 6010C ¹	EPA 200.7 ²
Sodium	277	2.0	mg/l	1	02/10/12	02/10/12 JB	SW846 6010C ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2177
(2) Prep QC Batch: MP6835

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID:	FRESHWATER PIT CONTENTS	Date Sampled:	02/08/12
Lab Sample ID:	D31748-2A	Date Received:	02/09/12
Matrix:	SO - Sludge	Percent Solids:	56.4
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	5.51		ratio	1	02/10/12 17:53	JB	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1160-MB	5V19407.D	1	02/11/12	BR	n/a	n/a	V5V1160

The QC reported here applies to the following samples:

Method: SW846 8260B

D31748-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	76% 61-130%
460-00-4	4-Bromofluorobenzene	94% 53-131%
17060-07-0	1,2-Dichloroethane-D4	84% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D31748A

Account: XTOKRWR XTO Energy

Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1160-BS	5V19408.D	1	02/11/12	BR	n/a	n/a	V5V1160

The QC reported here applies to the following samples:

Method: SW846 8260B

D31748-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.7	99	70-130
100-41-4	Ethylbenzene	50	50.4	101	70-130
108-88-3	Toluene	50	46.9	94	70-130
1330-20-7	Xylene (total)	150	159	106	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	78%	61-130%
460-00-4	4-Bromofluorobenzene	97%	53-131%
17060-07-0	1,2-Dichloroethane-D4	83%	62-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D31779-1MS	5V19410.D	1	02/11/12	BR	n/a	n/a	V5V1160
D31779-1MSD	5V19411.D	1	02/11/12	BR	n/a	n/a	V5V1160
D31779-1	5V19409.D	1	02/11/12	BR	n/a	n/a	V5V1160

The QC reported here applies to the following samples:

Method: SW846 8260B

D31748-2

CAS No.	Compound	D31779-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3280	3050	93	3670	112	18	70-134/30
100-41-4	Ethylbenzene	ND		3280	3050	93	3710	113	20	70-137/30
108-88-3	Toluene	ND		3280	2780	85	3390	103	20	70-130/30
1330-20-7	Xylene (total)	ND		9840	10000	102	12000	122	18	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D31779-1	Limits
2037-26-5	Toluene-D8	75%	84%	79%	61-130%
460-00-4	4-Bromofluorobenzene	105%	115%	96%	53-131%
17060-07-0	1,2-Dichloroethane-D4	79%	86%	83%	62-130%

* = Outside of Control Limits.

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5346-MB	3G07943.D	1	02/14/12	JR	02/13/12	OP5346	E3G314

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31748-2

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	5.3	ug/kg	
120-12-7	Anthracene	ND	6.7	6.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	8.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	12	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.3	ug/kg	
218-01-9	Chrysene	ND	17	7.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	12	ug/kg	
206-44-0	Fluoranthene	ND	6.7	6.7	ug/kg	
86-73-7	Fluorene	ND	6.7	5.7	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	18	ug/kg	
91-20-3	Naphthalene	ND	6.7	6.3	ug/kg	
129-00-0	Pyrene	ND	6.7	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	89% 10-145%
321-60-8	2-Fluorobiphenyl	82% 10-130%
1718-51-0	Terphenyl-d14	107% 22-130%

Blank Spike Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5346-BS	3G07944.D	1	02/14/12	JR	02/13/12	OP5346	E3G314

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31748-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	70.0	84	34-130
120-12-7	Anthracene	83.3	76.7	92	35-130
56-55-3	Benzo(a)anthracene	83.3	73.3	88	36-130
50-32-8	Benzo(a)pyrene	83.3	65.3	78	36-130
205-99-2	Benzo(b)fluoranthene	83.3	67.2	81	35-130
207-08-9	Benzo(k)fluoranthene	83.3	70.1	84	37-130
218-01-9	Chrysene	83.3	75.1	90	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	82.1	99	32-130
206-44-0	Fluoranthene	83.3	73.5	88	38-130
86-73-7	Fluorene	83.3	76.5	92	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	75.5	91	28-130
91-20-3	Naphthalene	83.3	74.9	90	35-130
129-00-0	Pyrene	83.3	78.2	94	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	87%	10-145%
321-60-8	2-Fluorobiphenyl	80%	10-130%
1718-51-0	Terphenyl-d14	97%	22-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5346-MS ^a	3G07993.D	20	02/16/12	DC	02/13/12	OP5346	E3G317
OP5346-MSD ^a	3G07994.D	20	02/16/12	DC	02/13/12	OP5346	E3G317
D31778-1 ^b	3G07992.D	20	02/16/12	DC	02/13/12	OP5346	E3G317

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31748-2

CAS No.	Compound	D31778-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		103	200	194*	202	196*	1	10-155/30
120-12-7	Anthracene	ND		103	ND	0*	ND	0*	nc	10-155/30
56-55-3	Benzo(a)anthracene	ND		103	ND	0*	ND	0*	nc	10-175/30
50-32-8	Benzo(a)pyrene	ND		103	ND	0*	ND	0*	nc	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		103	ND	0*	ND	0*	nc	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		103	ND	0*	ND	0*	nc	10-178/30
218-01-9	Chrysene	ND		103	ND	0*	ND	0*	nc	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		103	ND	0*	ND	0*	nc	10-144/30
206-44-0	Fluoranthene	ND		103	ND	0*	ND	0*	nc	10-207/30
86-73-7	Fluorene	480		103	736	249* ^c	782	293* ^c	6	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		103	ND	0*	ND	0*	nc	10-180/30
91-20-3	Naphthalene	326		103	2630	2237* ^c	548	216* ^c	131*	10-198/30
129-00-0	Pyrene	ND		103	ND	0*	ND	0*	nc	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D31778-1	Limits
4165-60-0	Nitrobenzene-d5	120%	115%	107%	10-145%
321-60-8	2-Fluorobiphenyl	100%	98%	107%	10-130%
1718-51-0	Terphenyl-d14	105%	110%	107%	22-130%

(a) Recoveries outside control limits due to dilution.

(b) Dilution required due to matrix interference. Internal standard recoveries were low in 1x and 4x dilutions.

(c) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB839-MB	GB14864.D	1	02/14/12	SK	n/a	n/a	GGB839

The QC reported here applies to the following samples: Method: SW846 8015B

D31748-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	109% 60-140%

Blank Spike Summary

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB839-BS	GB14865.D	1	02/14/12	SK	n/a	n/a	GGB839

The QC reported here applies to the following samples: Method: SW846 8015B

D31748-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	107	97	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	122%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D31833-1MS	GB14867.D	1	02/14/12	SK	n/a	n/a	GGB839
D31833-1MSD	GB14868.D	1	02/14/12	SK	n/a	n/a	GGB839
D31833-1	GB14866.D	1	02/14/12	SK	n/a	n/a	GGB839

The QC reported here applies to the following samples: Method: SW846 8015B

D31748-2

CAS No.	Compound	D31833-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		152	146	96	146	96	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D31833-1	Limits
120-82-1	1,2,4-Trichlorobenzene	117%	120%	115%	60-140%

8.3.1
8

* = Outside of Control Limits.

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5339-MB	FH001199.D	1	02/12/12	TR	02/10/12	OP5339	GFH52

The QC reported here applies to the following samples:

Method: SW846-8015B

D31748-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	92% 43-136%

9.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5339-BS	FH001201.D	1	02/12/12	TR	02/10/12	OP5339	GFH52

The QC reported here applies to the following samples:

Method: SW846-8015B

D31748-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	629	94	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	100%	43-136%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31748A
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5339-MS	FH001203.D	1	02/12/12	TR	02/10/12	OP5339	GFH52
OP5339-MSD	FH001205.D	1	02/12/12	TR	02/10/12	OP5339	GFH52
D31747-1	FH001207.D	1	02/12/12	TR	02/10/12	OP5339	GFH52

The QC reported here applies to the following samples:

Method: SW846-8015B

D31748-2

CAS No.	Compound	D31747-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	548		747	1130	78	1100	74	3	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D31747-1	Limits
84-15-1	o-Terphenyl	85%	83%	79%	43-136%

* = Outside of Control Limits.

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: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.060	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.050	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.060	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	0.040	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.060	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	0.010	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.24	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.020	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	0.25	<3.0

Associated samples MP6825: D31748-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

Metal	D31737-4 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	6760	7820	260	407.2(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	52.9	65.1	81.2	75-125
Calcium					
Chromium	14.9	69.7	65.1	85.6	75-125
Cobalt					
Copper	15.5	74.6	65.1	89.7	75-125
Iron					
Lead	179	244	130	49.9N(b)	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	22.1	70.6	65.1	78.4	75-125
Phosphorus					
Potassium					
Selenium	1.0	114	130	86.8	75-125
Silicon					
Silver	0.064	23.8	26	91.2	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	191	217	65.1	40.0N(b)	75-125

Associated samples MP6825: D31748-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

Metal	D31737-4 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	6760	6370	248	-157.5 (a)	20.4 (b)	20
Beryllium						
Boron						
Cadmium	0.0	49.6	61.9	80.0	6.4	20
Calcium						
Chromium	14.9	66.9	61.9	85.4	4.1	20
Cobalt						
Copper	15.5	71.1	61.9	88.7	4.8	20
Iron						
Lead	179	191	124	9.7N (c)	24.4 (b)	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	22.1	66.3	61.9	75.4	6.3	20
Phosphorus						
Potassium						
Selenium	1.0	106	124	84.8	7.3	20
Silicon						
Silver	0.064	22.3	24.8	89.8	6.5	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	191	185	61.9	-9.7N(c)	15.9	20

Associated samples MP6825: D31748-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- (b) High RPD due to possible sample matrix or nonhomogeneity.
- (c) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

Metal	BSP Result	Spikelot MPICPAL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	202	200	101.0	80-120
Beryllium				
Boron				
Cadmium	45.4	50	90.8	80-120
Calcium				
Chromium	48.5	50	97.0	80-120
Cobalt				
Copper	47.8	50	95.6	80-120
Iron				
Lead	90.9	100	90.9	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	45.6	50	91.2	80-120
Phosphorus				
Potassium				
Selenium	94.5	100	94.5	80-120
Silicon				
Silver	20.0	20	100.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.8	50	91.6	80-120

Associated samples MP6825: D31748-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 02/10/12

Metal	D31737-4 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	47300	58000	9.4	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC (a)	0-10
Calcium				
Chromium	110	112	2.1	0-10
Cobalt				
Copper	122	119	6.5	0-10
Iron				
Lead	1410	1490	5.7	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	154	166	7.8	0-10
Phosphorus				
Potassium				
Selenium	8.10	0.00	100.0(a)	0-10
Silicon				
Silver	3.50	4.00	700.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	1810	1740	16.6*(b)	0-10

Associated samples MP6825: D31748-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

- (anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/10/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.3		
Antimony	0.20	.001	.012		
Arsenic	0.40	.049	.1	0.029	<0.40
Barium	1.0	.0035	.025		
Beryllium	0.10	.0075	.055		
Boron	20	.97	.6		
Cadmium	0.050	.023	.034		
Calcium	200	1.8	9.5		
Chromium	1.0	.021	.041		
Cobalt	0.10	.0033	.0085		
Copper	1.0	.011	.055		
Iron	20	.81	18		
Lead	0.25	.0012	.023		
Magnesium	50	.067	.6		
Manganese	0.50	.007	.039		
Molybdenum	0.50	.0044	.025		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	6		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.022		
Sodium	250	.8	3		
Strontium	10	.004	.024		
Thallium	0.10	.015	.013		
Tin	5.0	.006	.15		
Titanium	1.0	.035	.12		
Uranium	0.25	.00038	.008		
Vanadium	2.0	.052	.19		
Zinc	5.0	.039	.23		

Associated samples MP6826: D31748-2

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: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6826
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/10/12

Metal	D31737-4 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	5.1	103	130	75.2	75-125
Barium					
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6826: D31748-2

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

10.2.2
10

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/10/12

Metal	D31737-4 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	5.1	94.1	124	71.9N(a)	4.3	20
Barium						
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6826: D31748-2

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) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6826
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/10/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	102	100	102.0	80-120
Barium				
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6826: D31748-2

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

10.2.3
10

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6826
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 02/10/12

Metal	D31737-4		%DIF	QC Limits
	Original	SDL 5:5		
Aluminum				
Antimony				
Arsenic	42.6	63.1	44.8*(a)	0-10
Barium				
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6826: D31748-2

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested
 (a) Serial dilution indicates possible matrix interference.

10.2.4
10

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	22.0	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	2.0	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	38.5	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP6835: D31748-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6835
 Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 02/10/12

Metal	D31748-1A Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	23100	157000	125000	107.1	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	55.0	125000	125000	100.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	1110000	1240000	125000	104.0	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6835: D31748-2A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

Metal	D31748-1A Original MSD		Spikelot MPICPALL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	23100	157000	125000	107.1	0.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	55.0	127000	125000	101.6	1.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	1110000	1290000	125000	144.0(a)	4.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6835: D31748-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	135000	125000	108.0	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	130000	125000	104.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	131000	125000	104.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6835: D31748-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP6837
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 02/13/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	-0.0027	<0.10

Associated samples MP6837: D31748-2

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: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6837
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

Metal	D31748-1		SpikeLot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.044	1.2	1.38	83.8	75-125

Associated samples MP6837: D31748-2

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: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6837
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

Metal	D31748-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.044	1.3	1.41	89.2	8.0	

Associated samples MP6837: D31748-2

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: D31748A
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP6837
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.32	0.4	80.0	80-120

Associated samples MP6837: D31748-2

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

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31748A
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6515/GN13692			umhos/cm	9967	9950	99.8	90-110%
pH	GN13621			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:
Batch GP6515: D31748-2
Batch GN13621: D31748-2
(*) Outside of QC limits

11.1
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Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D31748

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 2/10/2012

Delivery Method:

Client Service Action Required at Login: No

Project:

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 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"/> |

Cooler Temperature

Y or N

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

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" 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"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 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"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 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 | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 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 recvd 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