



01/17/12

## Technical Report for

**KRW Consulting, Inc.**

**XOM PCU T35X-2G**

**1108-11A**

**Accutest Job Number: D30937**

**Sampling Date: 01/09/12**

### Report to:

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**Total number of pages in report: 73**



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: 303-425-6021**

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

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Test results relate only to samples analyzed.

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Sample Summary

KRW Consulting, Inc.

Job No: D30937

XOM PCU T35X-2G  
Project No: 1108-11A

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D30937-1	01/09/12	12:45	DS	01/11/12	SO	Soil	FW SUBLINER
D30937-1A	01/09/12	12:45	DS	01/11/12	SO	Soil	FW SUBLINER

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

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** KRW Consulting, Inc.

**Job No** D30937

**Site:** XOM PCU T35X-2G

**Report Dat** 1/17/2012 9:56:31 AM

On 01/11/2012, 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 D30937 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:** V5V1122

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30761-1MS, D30761-1MSD were used as the QC samples indicated.

### Extractables by GCMS By Method SW846 8270C BY SIM

**Matrix** SO

**Batch ID:** OP5150

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30935-1MS, D30935-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB824

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30879-1MS, D30879-1MSD were used as the QC samples indicated.

### Extractables by GC By Method SW846-8015B

**Matrix** SO

**Batch ID:** OP5149

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30955-1MS, D30955-1MSD 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:** MP6651

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30935-1AMS, D30935-1AMSD were used as the QC samples for the metals analysis.

**Matrix** SO

**Batch ID:** MP6653

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30935-1MS, D30935-1MSD, D30935-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Lead, Selenium, Silver are outside control limits for sample MP6653-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- The serial dilution RPD(s) for Nickel, Zinc are outside control limits for sample MP6653-SD1. Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP6654

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30935-1MS, D30935-1MSD, D30935-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP6664

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30935-1MS, D30935-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN13228

- Sample(s) D30917-2DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN13229

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

## Wet Chemistry By Method SW846 3060/7196A M

**Matrix** SO

**Batch ID:** R11435

- The data for SW846 3060/7196A M meets quality control requirements.
- D30937-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

## Wet Chemistry By Method SW846 3060A/7196A

**Matrix** SO

**Batch ID:** M:GP14035

- The data for SW846 3060A/7196A meets quality control requirements.
- D30937-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

**Wet Chemistry By Method SW846 9045C****Matrix** SO**Batch ID:** GN13226

- The following sample was run outside of holding time for method SW846 9045C: D30937-1.

**Wet Chemistry By Method USDA HANDBOOK 60****Matrix** SO**Batch ID:** MP6651

- D30937-1A 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.

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest Mountain States

**Job No** D30937

**Site:** KRWCCOL: XOM PCU T35X-2G

**Report Date** 1/16/2012 8:21:31 AM

1 Sample(s) was collected on 01/09/2012 and were received at Accutest on 01/11/2012 properly preserved, at 1.7 Deg. C and intact. These Samples received an Accutest job number of D30937. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Wet Chemistry By Method SW846 3060A/7196A

**Matrix:** SO

**Batch ID:** GP14035

- All samples were distilled 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) D30848-1DUP, D30848-1MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D30937).

### Sample Results

### Report of Analysis



## Report of Analysis

<b>Client Sample ID:</b>	FW SUBLINER	<b>Date Sampled:</b>	01/09/12
<b>Lab Sample ID:</b>	D30937-1	<b>Date Received:</b>	01/11/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	84.4
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V18744.D	1	01/12/12	KV	n/a	n/a	V5V1122
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.068	0.030	mg/kg	
108-88-3	Toluene	ND	0.14	0.068	mg/kg	
100-41-4	Ethylbenzene	ND	0.14	0.034	mg/kg	
1330-20-7	Xylene (total)	ND	0.27	0.14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		61-130%
460-00-4	4-Bromofluorobenzene	97%		53-131%
17060-07-0	1,2-Dichloroethane-D4	109%		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

<b>Client Sample ID:</b>	FW SUBLINER	<b>Date Sampled:</b>	01/09/12
<b>Lab Sample ID:</b>	D30937-1	<b>Date Received:</b>	01/11/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	84.4
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07567.D	1	01/12/12	DC	01/12/12	OP5150	E3G286
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 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	0.0079	0.0063	mg/kg	
120-12-7	Anthracene	ND	0.0079	0.0071	mg/kg	
56-55-3	Benzo(a)anthracene	0.0147	0.020	0.010	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.020	0.014	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0166	0.020	0.015	mg/kg	J
207-08-9	Benzo(k)fluoranthene	ND	0.020	0.0087	mg/kg	
218-01-9	Chrysene	0.0392	0.020	0.0087	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.020	0.015	mg/kg	
206-44-0	Fluoranthene	0.0322	0.0079	0.0079	mg/kg	
86-73-7	Fluorene	0.342	0.0079	0.0067	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	0.022	mg/kg	
91-20-3	Naphthalene	0.140	0.0079	0.0075	mg/kg	
129-00-0	Pyrene	0.0331	0.0079	0.0075	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		10-145%
321-60-8	2-Fluorobiphenyl	98%		10-130%
1718-51-0	Terphenyl-d14	116%		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

<b>Client Sample ID:</b>	FW SUBLINER	<b>Date Sampled:</b>	01/09/12
<b>Lab Sample ID:</b>	D30937-1	<b>Date Received:</b>	01/11/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	84.4
<b>Method:</b>	SW846 8015B		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14568.D	1	01/12/12	SK	n/a	n/a	GGB824
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	11.2	14	6.8	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	93%		60-140%

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

<b>Client Sample ID:</b>	FW SUBLINER	<b>Date Sampled:</b>	01/09/12
<b>Lab Sample ID:</b>	D30937-1	<b>Date Received:</b>	01/11/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	84.4
<b>Method:</b>	SW846-8015B SW846 3546		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12758.D	1	01/12/12	TR	01/12/12	OP5149	GFD661
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)	597	16	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	72%		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: FW SUBLINER

Lab Sample ID: D30937-1

Matrix: SO - Soil

Project: XOM PCU T35X-2G

Date Sampled: 01/09/12

Date Received: 01/11/12

Percent Solids: 84.4

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.5	0.45	mg/kg	5	01/12/12	01/13/12 GJ	SW846 6020A <sup>2</sup>	SW846 3050B <sup>5</sup>
Barium	949	1.1	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.1	1.1	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	36.8	1.1	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	16.7	1.1	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	11.2	5.6	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.11	0.11	mg/kg	1	01/16/12	01/16/12 JB	SW846 7471B <sup>3</sup>	SW846 7471B <sup>6</sup>
Nickel	21.2	3.4	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium	< 5.6	5.6	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.4	3.4	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	42.7	3.4	mg/kg	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA2110

(2) Instrument QC Batch: MA2113

(3) Instrument QC Batch: MA2114

(4) Prep QC Batch: MP6653

(5) Prep QC Batch: MP6654

(6) Prep QC Batch: MP6664

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** FW SUBLINER**Lab Sample ID:** D30937-1**Matrix:** SO - Soil**Project:** XOM PCU T35X-2G**Date Sampled:** 01/09/12**Date Received:** 01/11/12**Percent Solids:** 84.4**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 0.47	0.47	mg/kg	1	01/12/12 15:53	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	36.4	1.6	mg/kg	1	01/12/12 20:34	JB	SW846 3060/7196A M
Redox Potential Vs H2	381		mv	1	01/11/12	JD	ASTM D1498-76M
Solids, Percent	84.4		%	1	01/12/12	SWT	SM19 2540B M
Specific Conductivity	4670	1.0	umhos/cm	1	01/14/12	CJ	DEPT.OF AG, BOOK N9
pH	10.13		su	1	01/11/12 15:55	JD	SW846 9045C

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

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

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	FW SUBLINER	<b>Date Sampled:</b>	01/09/12
<b>Lab Sample ID:</b>	D30937-1A	<b>Date Received:</b>	01/11/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	84.4
<b>Project:</b>	XOM PCU T35X-2G		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	55.9	2.0	mg/l	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	8.23	1.0	mg/l	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	929	2.0	mg/l	1	01/12/12	01/12/12 JB	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA2110  
(2) Prep QC Batch: MP6651

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	FW SUBLINER	<b>Date Sampled:</b>	01/09/12
<b>Lab Sample ID:</b>	D30937-1A	<b>Date Received:</b>	01/11/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	84.4
<b>Project:</b>	XOM PCU T35X-2G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	30.7		ratio	1	01/12/12 18:09	JB	USDA HANDBOOK 60

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

RL = Reporting Limit



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States  
4036 Youngfield Street Wheat Ridge, Co 80033  
TEL. 303-425-6021 877-737-4521  
FAX 303-425-6021

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # <b>D30937</b>

[illegible]

## D30937: Chain of Custody

Page 1 of 2

## Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** D30937

**Client:** KRW

**Immediate Client Services Action Required:** No

**Date / Time Received:** 1/11/2012 2:30:00 PM

**No. Coolers:** 1

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

**Project:** XTO

**Airbill #'s:** CO

**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"/>                             |  |
| 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"/> |  |

**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 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

## GC/MS Volatiles

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### QC Data Summaries

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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:** D30937

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1122-MB	5V18733.D	1	01/12/12	KV	n/a	n/a	V5V1122

The QC reported here applies to the following samples:

Method: SW846 8260B

D30937-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.44	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.50	ug/kg	
108-88-3	Toluene	ND	2.0	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	2.0	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	94% 61-130%
460-00-4	4-Bromofluorobenzene	86% 53-131%
17060-07-0	1,2-Dichloroethane-D4	104% 62-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D30937

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1122-BS	5V18734.D	1	01/12/12	KV	n/a	n/a	V5V1122

The QC reported here applies to the following samples:

Method: SW846 8260B

D30937-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	46.7	93	70-130
100-41-4	Ethylbenzene	50	49.0	98	70-130
108-88-3	Toluene	50	40.9	82	70-130
1330-20-7	Xylene (total)	150	158	105	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	96%	61-130%
460-00-4	4-Bromofluorobenzene	103%	53-131%
17060-07-0	1,2-Dichloroethane-D4	99%	62-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D30937  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30761-1MS	5V18736.D	1	01/12/12	KV	n/a	n/a	V5V1122
D30761-1MSD	5V18737.D	1	01/12/12	KV	n/a	n/a	V5V1122
D30761-1	5V18735.D	1	01/12/12	KV	n/a	n/a	V5V1122

The QC reported here applies to the following samples:

Method: SW846 8260B

D30937-1

CAS No.	Compound	D30761-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		4930	5020	102	5470	111	9	70-134/30
100-41-4	Ethylbenzene	1400		4930	6050	94	6600	105	9	70-137/30
108-88-3	Toluene	230		4930	4280	82	4700	91	9	70-130/30
1330-20-7	Xylene (total)	5720		14800	19200	91	20600	101	7	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D30761-1	Limits
2037-26-5	Toluene-D8	83%	90%	98%	61-130%
460-00-4	4-Bromofluorobenzene	102%	110%	106%	53-131%
17060-07-0	1,2-Dichloroethane-D4	91%	98%	106%	62-130%

## GC/MS Semi-volatiles

### QC Data Summaries

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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:** D30937  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5150-MB	3G07562.D	1	01/12/12	DC	01/12/12	OP5150	E3G286

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30937-1

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	80% 10-145%
321-60-8	2-Fluorobiphenyl	77% 10-130%
1718-51-0	Terphenyl-d14	83% 22-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D30937

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5150-BS	3G07563.D	1	01/12/12	DC	01/12/12	OP5150	E3G286

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30937-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	75.1	90	34-130
120-12-7	Anthracene	83.3	81.5	98	35-130
56-55-3	Benzo(a)anthracene	83.3	76.6	92	36-130
50-32-8	Benzo(a)pyrene	83.3	78.8	95	36-130
205-99-2	Benzo(b)fluoranthene	83.3	81.5	98	35-130
207-08-9	Benzo(k)fluoranthene	83.3	72.1	87	37-130
218-01-9	Chrysene	83.3	79.0	95	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	78.9	95	32-130
206-44-0	Fluoranthene	83.3	75.3	90	38-130
86-73-7	Fluorene	83.3	75.2	90	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	80.2	96	28-130
91-20-3	Naphthalene	83.3	75.5	91	35-130
129-00-0	Pyrene	83.3	81.2	97	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	80%	10-145%
321-60-8	2-Fluorobiphenyl	74%	10-130%
1718-51-0	Terphenyl-d14	81%	22-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D30937  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5150-MS	3G07565.D	1	01/12/12	DC	01/12/12	OP5150	E3G286
OP5150-MSD	3G07566.D	1	01/12/12	DC	01/12/12	OP5150	E3G286
D30935-1	3G07564.D	1	01/12/12	DC	01/12/12	OP5150	E3G286

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30937-1

CAS No.	Compound	D30935-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		95.5	88.2	92	80.6	84	9	10-155/30
120-12-7	Anthracene	ND		95.5	97.5	102	87.5	91	11	10-155/30
56-55-3	Benzo(a)anthracene	ND		95.5	96.4	101	87.1	91	10	10-175/30
50-32-8	Benzo(a)pyrene	ND		95.5	97.9	103	86.1	90	13	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		95.5	97.1	102	87.5	91	10	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		95.5	89.1	93	82.2	86	8	10-178/30
218-01-9	Chrysene	ND		95.5	94.3	99	86.7	91	8	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		95.5	101	106	82.1	86	21	10-144/30
206-44-0	Fluoranthene	ND		95.5	97.4	102	86.1	90	12	10-207/30
86-73-7	Fluorene	ND		95.5	93.6	98	85.7	90	9	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		95.5	101	106	80.4	84	23	10-180/30
91-20-3	Naphthalene	ND		95.5	86.9	91	89.1	93	2	10-198/30
129-00-0	Pyrene	ND		95.5	91.9	96	89.0	93	3	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D30935-1	Limits
4165-60-0	Nitrobenzene-d5	77%	75%	68%	10-145%
321-60-8	2-Fluorobiphenyl	72%	70%	65%	10-130%
1718-51-0	Terphenyl-d14	72%	76%	69%	22-130%

## GC Volatiles

## QC Data Summaries

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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:** D30937

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB824-MB	GB14547.D	1	01/11/12	SK	n/a	n/a	GGB824

The QC reported here applies to the following samples:

Method: SW846 8015B

D30937-1

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	95% 60-140%

Blank Spike Summary

Job Number: D30937  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB824-BS	GB14548.D	1	01/11/12	SK	n/a	n/a	GGB824

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

D30937-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	112	102	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	105%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30937  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30879-1MS	GB14550.D	1	01/11/12	SK	n/a	n/a	GGB824
D30879-1MSD	GB14551.D	1	01/11/12	SK	n/a	n/a	GGB824
D30879-1	GB14549.D	1	01/11/12	SK	n/a	n/a	GGB824

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

D30937-1

CAS No.	Compound	D30879-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		133	131	99	131	99	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D30879-1	Limits
120-82-1	1,2,4-Trichlorobenzene	101%	100%	94%	60-140%

7.3.1  
7

## GC Semi-volatiles

### QC Data Summaries

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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:** D30937  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5149-MB	FD12750.D	1	01/12/12	TR	01/12/12	OP5149	GFD661

The QC reported here applies to the following samples:

Method: SW846-8015B

D30937-1

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	72% 43-136%

8.1.1

8

Blank Spike Summary

Job Number: D30937  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5149-BS	FD12751.D	1	01/12/12	TR	01/12/12	OP5149	GFD661

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

D30937-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	438	66	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	74%	43-136%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30937  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5149-MS	FD12752.D	1	01/12/12	TR	01/12/12	OP5149	GFD661
OP5149-MSD	FD12753.D	1	01/12/12	TR	01/12/12	OP5149	GFD661
D30955-1	FD12754.D	1	01/12/12	TR	01/12/12	OP5149	GFD661

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

D30937-1

CAS No.	Compound	D30955-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	369		760	873	66	803	57	8	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D30955-1	Limits
84-15-1	o-Terphenyl	70%	69%	79%	43-136%

8.3.1  
8

## Metals Analysis

### QC Data Summaries

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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: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
Matrix Type: AQUEOUS

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

Prep Date: 01/12/12

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	44.5	<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	-8.5	<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	141	<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 MP6651: D30937-1A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
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: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
 Matrix Type: AQUEOUS

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

Prep Date: 01/12/12

Metal	D30935-1A Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	425000	571000	125000	116.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	92800	222000	125000	103.4	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	266000	398000	125000	105.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6651: D30937-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
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: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
Matrix Type: AQUEOUS

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

Prep Date: 01/12/12

	D30935-1A		Spikelot		MSD	QC
Metal	Original	MSD	MPICPAL	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	425000	550000	125000	100.0	3.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	92800	215000	125000	97.8	3.2	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	266000	377000	125000	88.8	5.4	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6651: D30937-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
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

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
Matrix Type: AQUEOUS

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

Prep Date: 01/12/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	137000	125000	109.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	127000	125000	101.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	128000	125000	102.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6651: D30937-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6651  
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: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/12/12

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	0.050	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.030	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.020	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	-0.080	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.020	<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	0.040	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.040	<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 MP6653: D30937-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/12/12

Metal	D30935-1 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	201	407	223	92.4	75-125
Beryllium					
Boron					
Cadmium	0.046	51.7	55.7	92.7	75-125
Calcium					
Chromium	48.8	101	55.7	93.7	75-125
Cobalt					
Copper	7.0	62.3	55.7	99.2	75-125
Iron					
Lead	7.2	109	111	91.3	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	15.3	64.3	55.7	87.9	75-125
Phosphorus					
Potassium					
Selenium	0.64	96.4	111	85.9	75-125
Silicon					
Silver	0.16	21.6	22.3	96.2	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	37.6	87.0	55.7	88.6	75-125

Associated samples MP6653: D30937-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/12/12

Metal	D30935-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	201	406	232	88.4	0.2	20
Beryllium						
Boron						
Cadmium	0.046	52.9	58	91.2	2.3	20
Calcium						
Chromium	48.8	100	58	88.3	1.0	20
Cobalt						
Copper	7.0	63.4	58	97.3	1.8	20
Iron						
Lead	7.2	112	116	90.4	2.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	15.3	65.1	58	85.9	1.2	20
Phosphorus						
Potassium						
Selenium	0.64	99.8	116	85.5	3.5	20
Silicon						
Silver	0.16	22.0	23.2	94.2	1.8	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	37.6	88.2	58	87.3	1.4	20

Associated samples MP6653: D30937-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 01/12/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	192	200	96.0	80-120
Beryllium				
Boron				
Cadmium	47.7	50	95.4	80-120
Calcium				
Chromium	49.8	50	99.6	80-120
Cobalt				
Copper	49.1	50	98.2	80-120
Iron				
Lead	98.1	100	98.1	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.0	50	96.0	80-120
Phosphorus				
Potassium				
Selenium	92.3	100	92.3	80-120
Silicon				
Silver	19.8	20	99.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	48.3	50	96.6	80-120

Associated samples MP6653: D30937-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: ug/l

Prep Date: 01/12/12

Metal	D30935-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	1750	1860	6.5	0-10
Beryllium				
Boron				
Cadmium	0.400	0.00	100.0(a)	0-10
Calcium				
Chromium	425	463	9.0	0-10
Cobalt				
Copper	61.3	60.0	2.1	0-10
Iron				
Lead	62.3	50.5	18.9 (a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	134	148	10.8*(b)	0-10
Phosphorus				
Potassium				
Selenium	5.60	36.0	542.9(a)	0-10
Silicon				
Silver	1.40	4.00	185.7(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	328	387	18.1*(b)	0-10

Associated samples MP6653: D30937-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6653  
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: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6654  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 01/12/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.3		
Antimony	0.20	.001	.012		
Arsenic	0.40	.049	.1	-0.037	<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 MP6654: D30937-1

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: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6654  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: mg/kg

Prep Date: 01/12/12

Metal	D30935-1 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	4.4	121	111	104.6	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 MP6654: D30937-1

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: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6654  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: mg/kg

Prep Date: 01/12/12

Metal	D30935-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.4	117	116	97.1	3.4	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 MP6654: D30937-1

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: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6654  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 01/12/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	106	100	106.0	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 MP6654: D30937-1

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

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6654  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: ug/l

Prep Date: 01/12/12

Metal	D30935-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	37.9	40.4	6.5	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 MP6654: D30937-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6664  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 01/16/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	0.0044	<0.10

Associated samples MP6664: D30937-1

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: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6664  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 01/16/12

Metal	D30935-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.0092 0.42	0.433	94.8	75-125

Associated samples MP6664: D30937-1

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: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6664  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 01/16/12

Metal	D30935-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.0092	0.43	0.459	91.6	2.4	

Associated samples MP6664: D30937-1

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: D30937  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6664  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 01/16/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.41	0.4	102.5	80-120

Associated samples MP6664: D30937-1

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

## General Chemistry

### QC Data Summaries

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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: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6308/GN13266			umhos/cm	10008	9980	99.7	90-110%
pH	GN13226			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:  
Batch GN13226: D30937-1  
Batch GP6308: D30937-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30937  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN13228	D30917-2	mv	472	482	2.1	0-20%

Associated Samples:  
Batch GN13228: D30937-1  
(\*) Outside of QC limits

## Misc. Forms

### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30937

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 1/12/2012

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

## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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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: D30937  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP14035/GN37530	0.40	0.0	mg/kg	40	38.5	96.3	80-120%
Chromium, Hexavalent	GP14035/GN37530			mg/kg	1180	1260	106.8	80-120%

Associated Samples:  
Batch GP14035: D30937-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30937  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP14035/GN37530	D30848-1	mg/kg	0.24	0.20	18.2	0-20%

Associated Samples:  
Batch GP14035: D30937-1  
(\*) Outside of QC limits



MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30937  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP14035/GN37530	D30848-1	mg/kg	0.24	43.9	44.0	99.7	75-125%
Chromium, Hexavalent	GP14035/GN37530	D30848-1	mg/kg	0.24	922	1000	108.4	75-125%

Associated Samples:  
Batch GP14035: D30937-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits