



11/11/11

Technical Report for

KRW Consulting, Inc.

XOM PCU T35X-2G

1108-11A

Accutest Job Number: D29262

Sampling Date: 11/07/11

Report to:

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Total number of pages in report: 74



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: D29262

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

Sample Number	Collected		Matrix Code	Type	Client	
	Date	Time By	Received		Sample ID	
D29262-1	11/07/11	11:45 CB	11/08/11	SO	Sludge	RESERVE PIT CONTENTS
D29262-1A	11/07/11	11:45 CB	11/08/11	SO	Sludge	RESERVE PIT CONTENTS

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: KRW Consulting, Inc.

Job No D29262

Site: XOM PCU T35X-2G

Report Dat 11/11/2011 4:26:24 PM

On 11/08/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D29262 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: V3V835
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29262-1MS, D29262-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP4813
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D29186-1RMS, D29186-1RMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of multiple analytes are outside control limits. Probable cause due to dilution.
- The RPD(s) for the MS and MSD recoveries of Benzo(a)anthracene are outside control limits for sample OP4813-MSD. Probable cause due to sample homogeneity.
- D29262-1: The reporting limits were raised due to matrix interference.

Volatiles by GC By Method SW846 8015B

Matrix SO	Batch ID: GGB780
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D29301-2MS, D29301-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix SO	Batch ID: OP4812
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D29276-1MS, D29276-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010B

Matrix AQ

Batch ID: MP6227

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29236-1AMS, D29236-1AMSD were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP6225

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29186-1RMS, D29186-1RMSD, D29186-1RSDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Selenium are outside control limits. Spike recovery indicates possible matrix interference.
- 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 serial dilution RPD(s) for Cadmium are outside control limits for sample MP6225-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- D29262-1 for Selenium: Elevated detection limit due to dilution required for possible matrix interference.
- The serial dilution RPD(s) for Barium, Chromium, Nickel, Zinc are outside control limits for sample MP6225-SD1. Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020

Matrix SO

Batch ID: MP6226

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29186-1RMS, D29186-1RMSD, D29186-1RSDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471A

Matrix SO

Batch ID: MP6224

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29206-1MS, D29206-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN12406

- Sample(s) D29207-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN12417

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R10693

- The data for SW846 3060/7196A M meets quality control requirements.
- D29262-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: M:GP13780

- The data for SW846 3060A/7196A meets quality control requirements.
- D29262-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW846 9045C

Matrix SO

Batch ID: GN12435

- The following sample was run outside of holding time for method SW846 9045C: D29262-1.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP6227

- D29262-1A 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 D29262

Site: KRWCCOL: XOM PCU T35X-2G

Report Date 11/11/2011 9:53:46 AM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 11/07/2011 and were received at Accutest on 11/08/2011 properly preserved, at 2.5 Deg. C and intact. These Samples received an Accutest job number of D29262. 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: GP13780

- 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) D29207-1DUP, D29207-1MS 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(D29262).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RESERVE PIT CONTENTS	Date Sampled:	11/07/11
Lab Sample ID:	D29262-1	Date Received:	11/08/11
Matrix:	SO - Sludge	Percent Solids:	41.7
Method:	SW846 8260B		
Project:	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14508.D	1	11/09/11	DC	n/a	n/a	V3V835
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	2.59 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	748	300	130	ug/kg	
108-88-3	Toluene	841	600	300	ug/kg	
100-41-4	Ethylbenzene	572	600	150	ug/kg	J
1330-20-7	Xylene (total)	8350	1200	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	107%		61-130%
460-00-4	4-Bromofluorobenzene	110%		53-131%
17060-07-0	1,2-Dichloroethane-D4	107%		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:	RESERVE PIT CONTENTS	Date Sampled:	11/07/11
Lab Sample ID:	D29262-1	Date Received:	11/08/11
Matrix:	SO - Sludge	Percent Solids:	41.7
Method:	SW846 8270C BY SIM SW846 3546		
Project:	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3G06865.D	10	11/10/11	TMB	11/09/11	OP4813	E3G253
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	160	130	ug/kg	
120-12-7	Anthracene	ND	160	140	ug/kg	
56-55-3	Benzo(a)anthracene	ND	400	210	ug/kg	
50-32-8	Benzo(a)pyrene	ND	400	290	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	400	290	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	400	180	ug/kg	
218-01-9	Chrysene	ND	400	180	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	400	290	ug/kg	
206-44-0	Fluoranthene	ND	160	160	ug/kg	
86-73-7	Fluorene	ND	160	140	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	480	440	ug/kg	
91-20-3	Naphthalene	ND	160	150	ug/kg	
129-00-0	Pyrene	ND	160	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	44%		10-145%
321-60-8	2-Fluorobiphenyl	38%		10-130%
1718-51-0	Terphenyl-d14	41%		22-130%

(a) Elevated RL due to 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

Client Sample ID:	RESERVE PIT CONTENTS			Date Sampled:	11/07/11
Lab Sample ID:	D29262-1			Date Received:	11/08/11
Matrix:	SO - Sludge			Percent Solids:	41.7
Method:	SW846 8015B				
Project:	XOM PCU T35X-2G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13785.D	1	11/09/11	SK	n/a	n/a	GGB780
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	2.6 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	114	60	30	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	78%		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

Client Sample ID:	RESERVE PIT CONTENTS					Date Sampled:	11/07/11
Lab Sample ID:	D29262-1					Date Received:	11/08/11
Matrix:	SO - Sludge					Percent Solids:	41.7
Method:	SW846-8015B SW846 3546						
Project:	XOM PCU T35X-2G						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD11424.D	1	11/09/11	TR	11/09/11	OP4812	GFD574
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)	374	32	21	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	98%		61-142%		

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: RESERVE PIT CONTENTS**Lab Sample ID:** D29262-1**Matrix:** SO - Sludge**Project:** XOM PCU T35X-2G**Date Sampled:** 11/07/11**Date Received:** 11/08/11**Percent Solids:** 41.7**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	7.0	0.93	mg/kg	5	11/09/11	11/11/11 GJ	SW846 6020 ³	SW846 3050B ⁷
Barium	13300	23	mg/kg	10	11/09/11	11/11/11 JB	SW846 6010B ⁴	SW846 3050B ⁶
Cadmium	< 2.3	2.3	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶
Chromium	12.0	2.3	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶
Copper	21.4	2.3	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶
Lead	17.0	12	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶
Mercury	< 0.21	0.21	mg/kg	1	11/09/11	11/09/11 JB	SW846 7471A ¹	SW846 7471A ⁵
Nickel	12.1	7.0	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶
Selenium ^a	< 120	120	mg/kg	10	11/09/11	11/11/11 JB	SW846 6010B ⁴	SW846 3050B ⁶
Silver	< 7.0	7.0	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶
Zinc	37.7	7.0	mg/kg	1	11/09/11	11/10/11 JB	SW846 6010B ²	SW846 3050B ⁶

(1) Instrument QC Batch: MA1959

(2) Instrument QC Batch: MA1960

(3) Instrument QC Batch: MA1962

(4) Instrument QC Batch: MA1966

(5) Prep QC Batch: MP6224

(6) Prep QC Batch: MP6225

(7) Prep QC Batch: MP6226

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID: RESERVE PIT CONTENTS**Lab Sample ID:** D29262-1**Matrix:** SO - Sludge**Project:** XOM PCU T35X-2G**Date Sampled:** 11/07/11**Date Received:** 11/08/11**Percent Solids:** 41.7

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.91	0.91	mg/kg	1	11/10/11 15:13	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	11.1	3.2	mg/kg	1	11/10/11 16:29	JB	SW846 3060/7196A M
Redox Potential Vs H2	325		mv	1	11/08/11 14:40	JK	ASTM D1498-76M
Solids, Percent	41.7		%	1	11/09/11	MM	SM19 2540B M
Specific Conductivity	1220	1.0	umhos/cm	1	11/11/11	JD	DEPT.OF AG, BOOK N9
pH	9.31		su	1	11/09/11 15:15	JD	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:	RESERVE PIT CONTENTS	Date Sampled:	11/07/11
Lab Sample ID:	D29262-1A	Date Received:	11/08/11
Matrix:	SO - Sludge	Percent Solids:	41.7
Project:	XOM PCU T35X-2G		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	10.2	2.0	mg/l	1	11/09/11	11/10/11 JB	SW846 6010B ¹	EPA 200.7 1994 ²
Magnesium	4.06	1.0	mg/l	1	11/09/11	11/10/11 JB	SW846 6010B ¹	EPA 200.7 1994 ²
Sodium	259	2.0	mg/l	1	11/09/11	11/10/11 JB	SW846 6010B ¹	EPA 200.7 1994 ²

(1) Instrument QC Batch: MA1960
(2) Prep QC Batch: MP6227

RL = Reporting Limit

Report of Analysis

32
3

Client Sample ID:	RESERVE PIT CONTENTS	Date Sampled:	11/07/11
Lab Sample ID:	D29262-1A	Date Received:	11/08/11
Matrix:	SO - Sludge	Percent Solids:	41.7
Project:	XOM PCU T35X-2G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	17.3		ratio	1	11/10/11 12:08	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

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 # D29262

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)												Matrix Codes															
Company Name KRW Consulting Inc		Project Name XOM PCU T35X-2G		<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border: 1px solid black; padding: 2px;">Table 910-1</div> <div style="margin-left: 10px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank </div> <div style="width: 5%; text-align: center;"> LAB USE ONLY <div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> 01 </div> </div> </div> </div> </div>																											
Street Address 8000 W. 14th Ave Ste 200		Street																													
City, State, Zip Lakewood CO 80214		Billing Information (If different from Report to)																													
Project Contact Wayne Knudson		Company Name																													
Phone # 970 835 4066		Street Address																													
Sample(s) Name(s) Craig Burger 970 756 2443		Project Manager Joe Hen		City, State, Zip		Attention:		PO#																							
Field ID / Point of Collection Reserve Pit Contents		MECH/ID Viol #		Collection		Sampled by		Matrix		# of bottles		HCl		NaOH		HNO3		H2SO4		NONE		DI Water		MEOH		ENCORE		Biosafe			
				Date 11-7-11		Time 11:45		AB		SL		5								5											

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29262

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 11/8/2011 12:00:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM

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
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Wheat Ridge, CO
www.accutest.com

GC/MS Volatiles

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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: D29262

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V835-MB	3V14506.D	1	11/09/11	DC	n/a	n/a	V3V835

The QC reported here applies to the following samples:

Method: SW846 8260B

D29262-1

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	107% 61-130%
460-00-4	4-Bromofluorobenzene	104% 53-131%
17060-07-0	1,2-Dichloroethane-D4	105% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D29262

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V835-BS	3V14507.D	1	11/09/11	DC	n/a	n/a	V3V835

The QC reported here applies to the following samples:

Method: SW846 8260B

D29262-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	52.3	105	70-130
100-41-4	Ethylbenzene	50	55.1	110	70-130
108-88-3	Toluene	50	51.5	103	70-130
1330-20-7	Xylene (total)	150	165	110	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	105%	61-130%
460-00-4	4-Bromofluorobenzene	109%	53-131%
17060-07-0	1,2-Dichloroethane-D4	102%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29262-1MS	3V14510.D	1	11/09/11	DC	n/a	n/a	V3V835
D29262-1MSD	3V14511.D	1	11/09/11	DC	n/a	n/a	V3V835
D29262-1	3V14508.D	1	11/09/11	DC	n/a	n/a	V3V835

The QC reported here applies to the following samples:

Method: SW846 8260B

D29262-1

CAS No.	Compound	D29262-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	748		15100	15800	100	16600	105	5	70-134/30
100-41-4	Ethylbenzene	572	J	15100	16400	105	17000	109	4	70-137/30
108-88-3	Toluene	841		15100	15700	99	16400	103	4	70-130/30
1330-20-7	Xylene (total)	8350		45200	55500	104	57400	108	3	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D29262-1	Limits
2037-26-5	Toluene-D8	105%	105%	107%	61-130%
460-00-4	4-Bromofluorobenzene	116%	115%	110%	53-131%
17060-07-0	1,2-Dichloroethane-D4	104%	106%	107%	62-130%

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: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4813-MB	3G06855.D	1	11/10/11	TMB	11/09/11	OP4813	E3G253

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29262-1

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	105% 10-145%
321-60-8	2-Fluorobiphenyl	93% 10-130%
1718-51-0	Terphenyl-d14	109% 22-130%

Blank Spike Summary

Page 1 of 1

Job Number: D29262

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4813-BS	3G06856.D	1	11/10/11	TMB	11/09/11	OP4813	E3G253

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29262-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	73.9	89	34-130
120-12-7	Anthracene	83.3	84.2	101	35-130
56-55-3	Benzo(a)anthracene	83.3	81.8	98	36-130
50-32-8	Benzo(a)pyrene	83.3	82.9	99	36-130
205-99-2	Benzo(b)fluoranthene	83.3	97.1	117	35-130
207-08-9	Benzo(k)fluoranthene	83.3	72.3	87	37-130
218-01-9	Chrysene	83.3	76.1	91	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	78.6	94	32-130
206-44-0	Fluoranthene	83.3	81.9	98	38-130
86-73-7	Fluorene	83.3	79.0	95	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	86.3	104	28-130
91-20-3	Naphthalene	83.3	73.3	88	35-130
129-00-0	Pyrene	83.3	79.4	95	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	104%	10-145%
321-60-8	2-Fluorobiphenyl	93%	10-130%
1718-51-0	Terphenyl-d14	101%	22-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4813-MS ^a	3G06862.D	10	11/10/11	TMB	11/09/11	OP4813	E3G253
OP4813-MSD ^a	3G06863.D	10	11/10/11	TMB	11/09/11	OP4813	E3G253
D29186-1R	3G06861.D	10	11/10/11	TMB	11/09/11	OP4813	E3G253

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29262-1

CAS No.	Compound	D29186-1R ug/kg	Spike Q	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	96.6	77.2	80	81.6	85	6	10-155/30
120-12-7	Anthracene	ND	96.6	88.6	92	92.4	96	4	10-155/30
56-55-3	Benzo(a)anthracene	ND	96.6	ND	0*	103	107	200*	10-175/30
50-32-8	Benzo(a)pyrene	ND	96.6	ND	0*	ND	0*	nc	10-164/30
205-99-2	Benzo(b)fluoranthene	ND	96.6	ND	0*	ND	0*	nc	10-165/30
207-08-9	Benzo(k)fluoranthene	ND	96.6	ND	0*	ND	0*	nc	10-178/30
218-01-9	Chrysene	ND	96.6	ND	0*	ND	0*	nc	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND	96.6	ND	0*	ND	0*	nc	10-144/30
206-44-0	Fluoranthene	ND	96.6	121	125	126	131	4	10-207/30
86-73-7	Fluorene	ND	96.6	135	140	136	141	1	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND	96.6	ND	0*	ND	0*	nc	10-180/30
91-20-3	Naphthalene	151	96.6	213	64	220	71	3	10-198/30
129-00-0	Pyrene	ND	96.6	103	107	104	108	1	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D29186-1R	Limits
4165-60-0	Nitrobenzene-d5	95%	100%	96%	10-145%
321-60-8	2-Fluorobiphenyl	77%	81%	85%	10-130%
1718-51-0	Terphenyl-d14	73%	76%	81%	22-130%

(a) Outside control limits due to dilution.

GC 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: D29262

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB780-MB	GB13777.D	1	11/09/11	SK	n/a	n/a	GGB780

The QC reported here applies to the following samples:

Method: SW846 8015B

D29262-1

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	74% 60-140%

Blank Spike Summary

Job Number: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB780-BS	GB13778.D	1	11/09/11	SK	n/a	n/a	GGB780

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

D29262-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	120	109	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	90%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29301-2MS	GB13780.D	1	11/09/11	SK	n/a	n/a	GGB780
D29301-2MSD	GB13781.D	1	11/09/11	SK	n/a	n/a	GGB780
D29301-2	GB13779.D	1	11/09/11	SK	n/a	n/a	GGB780

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

D29262-1

CAS No.	Compound	D29301-2 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		153	170	111	170	111	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D29301-2	Limits
120-82-1	1,2,4-Trichlorobenzene	86%	88%	72%	60-140%

7.3.1
7

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: D29262

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4812-MB	FD11415.D	1	11/09/11	TR	11/09/11	OP4812	GFD574

The QC reported here applies to the following samples:

Method: SW846-8015B

D29262-1

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	103% 61-142%

8.1.1

8

Blank Spike Summary

Job Number: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4812-BS	FD11416.D	1	11/09/11	TR	11/09/11	OP4812	GFD574

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

D29262-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	672	101	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	100%	61-142%

8.2.1
8

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29262
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4812-MS	FD11417.D	1	11/09/11	TR	11/09/11	OP4812	GFD574
OP4812-MSD	FD11418.D	1	11/09/11	TR	11/09/11	OP4812	GFD574
D29276-1	FD11419.D	1	11/09/11	TR	11/09/11	OP4812	GFD574

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

D29262-1

CAS No.	Compound	D29276-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	744		771	1550	105	1460	93	6	24-157/35

CAS No.	Surrogate Recoveries	MS	MSD	D29276-1	Limits
84-15-1	o-Terphenyl	92%	91%	91%	61-142%

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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6224
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 11/09/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	0.0022	<0.10

Associated samples MP6224: D29262-1

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: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6224
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/09/11

Metal	D29206-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
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Mercury	0.16	2.1	1.94	99.9	85-115
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Associated samples MP6224: D29262-1

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: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6224
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/09/11

Metal	D29206-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.16	2.0	1.9	96.7	4.9	20

Associated samples MP6224: D29262-1

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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6224
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 11/09/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.43	0.4	107.5	80-120

Associated samples MP6224: D29262-1

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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/09/11

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	0.27	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.010	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.040	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	-0.030	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.19	<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	0.050	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.14	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.050	<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	0.37	<3.0

Associated samples MP6225: D29262-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/09/11

Metal	D29186-1R Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	5000	5870	239	363.7(a)	75-125
Beryllium					
Boron					
Cadmium	0.28	51.0	59.8	84.8	75-125
Calcium					
Chromium	22.1	71.4	59.8	82.4	75-125
Cobalt					
Copper	15.8	72.1	59.8	94.1	75-125
Iron					
Lead	14.9	116	120	84.5	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	14.2	61.7	59.8	79.4	75-125
Phosphorus					
Potassium					
Selenium	0.0	160	120	133.8N(b)	75-125
Silicon					
Silver	0.0	21.5	23.9	89.9	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	41.2	98.2	59.8	95.3	75-125

Associated samples MP6225: D29262-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
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.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/09/11

	D29186-1R		Spikelot		MSD	QC
Metal	Original	MSD	MPICPAL	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic						
Barium	5000	5630	237	266.1(a)	4.2	20
Beryllium						
Boron						
Cadmium	0.28	50.1	59.2	84.2	1.8	20
Calcium						
Chromium	22.1	73.2	59.2	86.3	2.5	20
Cobalt						
Copper	15.8	71.3	59.2	93.8	1.1	20
Iron						
Lead	14.9	114	118	83.7	1.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	14.2	63.0	59.2	82.4	2.1	20
Phosphorus						
Potassium						
Selenium	0.0	155	118	130.9N(b)	3.2	20
Silicon						
Silver	0.0	21.2	23.7	89.5	1.4	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	41.2	90.5	59.2	83.3	8.2	20

Associated samples MP6225: D29262-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
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.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6225
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/09/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	183	200	91.5	80-120
Beryllium				
Boron				
Cadmium	45.7	50	91.4	80-120
Calcium				
Chromium	47.1	50	94.2	80-120
Cobalt				
Copper	47.2	50	94.4	80-120
Iron				
Lead	96.0	100	96.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	46.3	50	92.6	80-120
Phosphorus				
Potassium				
Selenium	96.6	100	96.6	80-120
Silicon				
Silver	19.4	20	97.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	48.6	50	97.2	80-120

Associated samples MP6225: D29262-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6225
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/09/11

Metal	D29186-1R Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	30100	46200	11.8*(a)	0-10
Beryllium				
Boron				
Cadmium	2.30	0.00	100.0(b)	0-10
Calcium				
Chromium	183	205	11.6*(a)	0-10
Cobalt				
Copper	131	127	2.9	0-10
Iron				
Lead	124	129	4.3	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	118	136	15.7*(a)	0-10
Phosphorus				
Potassium				
Selenium	27.6	0.00		0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	341	417	22.2*(a)	0-10

Associated samples MP6225: D29262-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6225
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6226
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 11/09/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.00050	<0.40
Barium	1.0	.0035	.1		
Beryllium	0.10	.0075	.014		
Boron	20	.97	1		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	8.2		
Chromium	1.0	.021	.24		
Cobalt	0.10	.0033	.003		
Copper	1.0	.011	.063		
Iron	20	.81	3.7		
Lead	0.25	.0012	.015		
Magnesium	50	.067	2.6		
Manganese	0.50	.007	.029		
Molybdenum	0.50	.0044	.023		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	3.2		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.002		
Sodium	250	.8	4.4		
Strontium	10	.004	.04		
Thallium	0.10	.015	.02		
Tin	5.0	.006	.028		
Titanium	1.0	.035	.062		
Uranium	0.25	.00038	.0009		
Vanadium	2.0	.052	.29		
Zinc	5.0	.039	.12		

Associated samples MP6226: D29262-1

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: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6226
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/09/11

Metal	D29186-1R Original MS		Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	6.8	125	120	98.8	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 MP6226: D29262-1

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: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6226
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/09/11

Metal	D29186-1R Original MSD	Spikelot MPICPAL % Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic	6.8	123	118	98.2
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 MP6226: D29262-1

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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6226
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 11/09/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	99.8	100	99.8	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 MP6226: D29262-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6226
 Matrix Type: SOLID

Methods: SW846 6020
 Units: ug/l

Prep Date: 11/09/11

Metal	D29186-1R			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	56.7	59.2	4.6	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 MP6226: D29262-1

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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

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

Prep Date: 11/09/11

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	25.5	<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	32.0	<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	-57	<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 MP6227: D29262-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM PCU T35X-2G

QC Batch ID: MP6227
 Matrix Type: AQUEOUS

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

Prep Date: 11/09/11

Metal	D29236-1A Original MS		Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	37700	175000	125000	109.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	3850	133000	125000	103.3	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	78800	206000	125000	101.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6227: D29262-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

Methods: SW846 6010B, 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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

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

Prep Date: 11/09/11

Metal	D29236-1A Original MSD		Spikelot MPICPAL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	37700	171000	125000	106.6	2.3	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	3850	132000	125000	102.5	0.8	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	78800	202000	125000	98.6	2.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6227: D29262-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

Methods: SW846 6010B, 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: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

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

Prep Date: 11/09/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	138000	125000	110.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	130000	125000	104.0	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 MP6227: D29262-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29262
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU T35X-2G

QC Batch ID: MP6227
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(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: D29262
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	GP5922/GN12468			umhos/cm	9980	9980	100.0	90-110%
pH	GN12435			su	8.00	7.96	99.5	99.3-100.7%

Associated Samples:
Batch GN12435: D29262-1
Batch GP5922: D29262-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29262
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	GN12406	D29207-1	mv	383	149	7.7	0-20%

Associated Samples:
Batch GN12406: D29262-1
(*) Outside of QC limits

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: D29262

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 11/9/2011

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.)

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: D29262
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	GP13780/GN36845	0.40	0.26	mg/kg	40	42.8	107.0	80-120%
Chromium, Hexavalent	GP13780/GN36845			mg/kg	1390	1520	109.4	80-120%

Associated Samples:
Batch GP13780: D29262-1
(*) Outside of QC limits

BLANK SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29262
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
Chromium, Hexavalent	GP13780/GN36845	mg/kg	40	43.4	1.4	

Associated Samples:
Batch GP13780: D29262-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29262
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	GP13780/GN36845	D29207-1	mg/kg	0.26	0.26	0.0	0-20%

Associated Samples:
Batch GP13780: D29262-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29262
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	GP13780/GN36845	D29207-1	mg/kg	0.26	43.9	38.2	86.4	75-125%
Chromium, Hexavalent	GP13780/GN36845	D29207-1	mg/kg	0.26	1200	1440	120.3	75-125%

Associated Samples:
Batch GP13780: D29262-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits