

Complaint # 200210933

Remediation # 4523



ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
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Tax I.D. 62-0814289

Est. 1970

Encana
2717 Co. Rd. 215

Parachute, CO 81635

Report Summary

Wednesday May 27, 2009

Report Number: L403205

Samples Received: 05/19/09

Client Project: 8720.382 08108770

Description: F11E Pit Sample

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

John D. Blackman, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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Where applicable, sampling conducted by ESC is performed per guidance provided
in laboratory standard operating procedures: 060302, 060303, and 060304.



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REPORT OF ANALYSIS

May 27, 2009

Encana
2717 Co. Rd. 215
Parachute, CO 81635

Date Received : May 19, 2009
Description : F11E Pit Sample
Sample ID : F11E PIT BOTTOM
Collected By : Brett Middleton
Collection Date : 05/18/09 11:00

ESC Sample # : L403205-01

Site ID : F11E PIT BOTTOM

Project # : 8720.382 08108770

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/22/09	1
Chromium, Trivalent	14.	0.50	mg/kg	Calc.	05/23/09	1
ORP	180		mV	2580	05/26/09	1
pH	7.9		su	9045D	05/22/09	1
Sodium Adsorption Ratio	8.9			Calc.	05/21/09	1
Specific Conductance	920		umhos/cm	9050AMod	05/21/09	1
Mercury	BDL	0.020	mg/kg	7471	05/20/09	1
Arsenic	2.1	1.0	mg/kg	6010B	05/23/09	1
Barium	1900	0.25	mg/kg	6010B	05/23/09	1
Boron	12.	10.	mg/kg	6010B	05/23/09	1
Cadmium	0.28	0.25	mg/kg	6010B	05/23/09	1
Chromium	14.	0.50	mg/kg	6010B	05/23/09	1
Copper	9.3	1.0	mg/kg	6010B	05/23/09	1
Lead	8.9	0.25	mg/kg	6010B	05/23/09	1
Nickel	12.	1.0	mg/kg	6010B	05/23/09	1
Selenium	3.4	1.0	mg/kg	6010B	05/23/09	1
Silver	BDL	0.50	mg/kg	6010B	05/26/09	1
Zinc	34.	1.5	mg/kg	6010B	05/23/09	1
TPH (GC/FID) Low Fraction	63.	10.	mg/kg	8015D/GRO	05/20/09	100
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	85.5		% Rec.	602/8015	05/20/09	100
Benzene	0.096	0.050	mg/kg	8260B	05/20/09	50
Toluene	0.98	0.25	mg/kg	8260B	05/20/09	50
Ethylbenzene	0.16	0.050	mg/kg	8260B	05/20/09	50
Total Xylenes	3.4	0.15	mg/kg	8260B	05/20/09	50
Surrogate Recovery						
Toluene-d8	99.1		% Rec.	8260B	05/20/09	50
Dibromofluoromethane	97.3		% Rec.	8260B	05/20/09	50
a,a,a-Trifluorotoluene	95.7		% Rec.	8260B	05/20/09	50
4-Bromofluorobenzene	112.		% Rec.	8260B	05/20/09	50
TPH (GC/FID) High Fraction	32.	4.0	mg/kg	3546/DRO	05/20/09	1
Surrogate recovery(%) o-Terphenyl	94.3		% Rec.	3546/DRO	05/20/09	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L403205-01 (PH) - 7.9@24.8c



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Date Received : May 19, 2009
Description : F11E Pit Sample
Sample ID : F11E PIT BOTTOM
Collected By : Brett Middleton
Collection Date : 05/18/09 11:00

ESC Sample # : L403205-01

Site ID : F11E PIT BOTTOM

Project # : 8720.382 08108770

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	05/20/09	1
Acenaphthene	BDL	0.033	mg/kg	8270C	05/20/09	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	05/20/09	1
Benzo(a)anthracene	BDL	0.033	mg/kg	8270C	05/20/09	1
Benzo(a)pyrene	BDL	0.033	mg/kg	8270C	05/20/09	1
Benzo(b)fluoranthene	BDL	0.033	mg/kg	8270C	05/20/09	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	05/20/09	1
Benzo(k)fluoranthene	BDL	0.033	mg/kg	8270C	05/20/09	1
Chrysene	BDL	0.033	mg/kg	8270C	05/20/09	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	05/20/09	1
Fluoranthene	BDL	0.033	mg/kg	8270C	05/20/09	1
Fluorene	BDL	0.033	mg/kg	8270C	05/20/09	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	05/20/09	1
Naphthalene	BDL	0.033	mg/kg	8270C	05/20/09	1
Phenanthrene	BDL	0.033	mg/kg	8270C	05/20/09	1
Pyrene	BDL	0.033	mg/kg	8270C	05/20/09	1
Surrogate Recovery						
Nitrobenzene-d5	81.1		% Rec.	8270C	05/20/09	1
2-Fluorobiphenyl	90.1		% Rec.	8270C	05/20/09	1
p-Terphenyl-d14	67.6		% Rec.	8270C	05/20/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: Printed: 05/27/09 17:13
L403205-01 (PH) - 7.9@24.8c

Complaint # 200210933

Remediation # 4523

Summary of Remarks For Samples Printed
05/27/09 at 17:13:38

TSR Signing Reports: 151
R5 - Desired TAT

AFE - 4021929; JDE - 8715.692. Put AFE or JDE after sample ids. 10/4/07 JB.

Sample: L403205-01 Account: ENCRCO Received: 05/19/09 09:00 Due Date: 05/26/09 00:00 RPT Date:



07/20/09

Technical Report for

EnCana

F11E Pit Sample

Accutest Job Number: T30410

Sampling Date: 05/18/09

Report to:

EnCana

christopher.hines@encana.com

Total number of pages in report: 15



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.

Paul K Canevaro

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary 3

Section 2: Sample Results 4

2.1: T30410-1: FILE PIT BOTTOM 5

Section 3: Misc. Forms 6

3.1: Chain of Custody 7

Section 4: Metals Analysis - QC Data Summaries 10

4.1: Prep QC MP9618: As,B 11



Sample Summary

EnCana

Job No: T30410

F11E Pit Sample

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
T30410-1	05/18/09	11:00 BM	06/04/09	SO	Soil	FILE PIT BOTTOM

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



IT'S ALL IN THE CHEMISTRY

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FILE PIT BOTTOM	Date Sampled:	05/18/09
Lab Sample ID:	T30410-1	Date Received:	06/04/09
Matrix:	SO - Soil	Percent Solids:	83.2
Project:	F11E Pit Sample		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.2	0.70	0.14	mg/kg	1	06/04/09	06/04/09 NS	SW846 6010B ¹	SW846 3050B ²
Boron	2.4 B	7.0	0.15	mg/kg	1	06/04/09	06/04/09 NS	SW846 6010B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4098

(2) Prep QC Batch: MP9618

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

→ 24°C notice

SAMPLE INSPECTION FORM

Accutest Job Number: T30410 Client: Enclana Date/Time Received: 06/04/09 910
 # of Coolers Received: 1 Thermometer #: 12-1 Temperature Adjustment Factor: -0.4
 Cooler Temps: #1: 24.0 #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEx UPS Accutest Courier Greyhound Delivery Other _____
 Airbill Numbers: _____

COOLER INFORMATION

- ☐ Custody seal missing or not intact
☒ Temperature criteria not met
☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
☐ Sample D/T unclear or missing
☐ Analyses unclear or missing
☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
☐ VOC vials have headspace
☐ Sample labels missing or illegible
☐ ID on COC does not match label(s)
☐ D/T on COC does not match label(s)
☐ Sample/Bottles rcvd but no analysis on COC
☐ Sample listed on COC, but not received
☐ Bottles missing for requested analysis
☐ Insufficient volume for analysis
☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
☐ Trip Blank received but not on COC
☐ Trip Blank not intact
☐ Received Water Trip Blank
☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

1. No ice came in a box.

TECHNICIAN SIGNATURE/DATE: [Signature] 06/04/09

INFORMATION AND SAMPLE LABELING VERIFIED BY: GC 6.49

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: 6-4-9

By Accutest Representative: [Signature] Via: Phone Email

Client Instructions: _____

Okay for metals - no ice

L:\mwalker\forms\samplemanagement

T30410: Chain of Custody

Page 2 of 3



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: T30410
Account: ENCACOP - EnCana
Project: File Pit Sample

QC Batch ID: MP9618
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 06/04/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.82	2.2		
Antimony	0.50	.11	.14		
Arsenic	0.50	.089	.1	0.017	<0.50
Barium	10	.007	.03		
Beryllium	0.25	.0055	.01		
Boron	5.0	.054	.11	0.048	<5.0
Cadmium	0.25	.013	.05		
Calcium	250	.27	.86		
Chromium	0.50	.055	.035		
Cobalt	2.5	.025	.09		
Copper	1.3	.029	.065		
Iron	5.0	.65	1.1		
Lead	0.50	.079	.2		
Magnesium	250	.34	.58		
Manganese	0.75	.01	.035		
Molybdenum	0.50	.048	.075		
Nickel	2.0	.048	.065		
Potassium	250	2.7	16		
Selenium	0.50	.16	.12		
Silver	0.50	.043	.04		
Sodium	250	6.5	13		
Strontium	1.0	.0085	.025		
Thallium	0.50	.16	.25		
Tin	1.0	.09	.12		
Titanium	1.0	.015	.045		
Vanadium	2.5	.03	.06		
Zinc	1.0	.025	.2		

Associated samples MP9618: T30410-1

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: T30410
Account: ENCACOP - EnCana
Project: F11E Pit Sample

QC Batch ID: MP9618
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

06/04/09

06/04/09

Metal	T30396-1 Original	DUP	RPD	QC Limits	T30396-1 Original MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum								
Antimony								
Arsenic	4.1	4.2	2.4	0-20	4.1	25.3	25.7	82.6
Barium	anr							
Beryllium								
Boron	0.0	0.0	NC	0-20	0.0	46.1	51.4	89.8
Cadmium	anr							
Calcium								
Chromium	anr							
Cobalt	anr							
Copper								
Iron								
Lead	anr							
Magnesium								
Manganese								
Molybdenum	anr							
Nickel	anr							
Potassium								
Selenium	anr							
Silver	anr							
Sodium								
Strontium								
Thallium								
Tin								
Titanium								
Vanadium	anr							
Zinc								

Associated samples MP9618: T30410-1

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: T30410
Account: ENCACOP - EnCana
Project: File Pit Sample

QC Batch ID: MP9618
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 06/04/09

Metal	T30396-1 Original	MSD	Spikelot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.1	25.1	26.2	80.0	0.8	20
Barium	anr					
Beryllium						
Boron	0.0	46.6	52.5	88.8	1.1	20
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt	anr					
Copper						
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum	anr					
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium	anr					
Zinc						

Associated samples MP9618: T30410-1

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: T30410
Account: ENCACOP - EnCana
Project: F11E Pit Sample

QC Batch ID: MP9618
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 06/04/09

Metal	LCS Result	Spikelot MPLCD050	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	266	280	95.0	81-119
Barium	anr			
Beryllium				
Boron	78.9	94.8	83.2	64-136
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium	anr			
Zinc				

Associated samples MP9618: T30410-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: T30410
Account: ENCACOP - EnCana
Project: Flle Pit Sample

QC Batch ID: MP9618
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/04/09

Metal	T30396-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	64.3	76.5	19.1 (a)	0-10
Barium	anr			
Beryllium				
Boron	0.00	0.00	NC	0-10
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium	anr			
Zinc				

Associated samples MP9618: T30410-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

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



07/14/09

Technical Report for

EnCana

F11E Pit Sample

Accutest Job Number: T30410A

Sampling Date: 05/18/09

Report to:

EnCana

brett.middleton@encana.com

ATTN: Brett Middleton

Total number of pages in report: 9



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.

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Table of Contents

-1-

Section 1: Sample Summary 3

Section 2: Sample Results 4

2.1: T30410-1A: FILE PIT BOTTOM 5

Section 3: Misc. Forms 6

3.1: Chain of Custody 7



Sample Summary

EnCana
F11E Pit Sample

Job No: T30410A

Sample Number	Collected		Matrix		Client	
	Date	Time By	Received	Code Type	Sample ID	
T30410-1A	05/18/09	11:00 BM	06/04/09	AQ Water Extract	FILE PIT BOTTOM	



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FILE PIT BOTTOM	Date Sampled:	05/18/09
Lab Sample ID:	T30410-1A	Date Received:	06/04/09
Matrix:	AQ - Water Extract	Percent Solids:	83.2
Project:	F11E Pit Sample		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Boron	348	200	4.2	ug/l	1	07/13/09	07/14/09 NS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4165
(2) Prep QC Batch: MP9845

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

→ 24°C notice

7 of 9
ACCUTEST.
T30410A Laboratories

SAMPLE INSPECTION FORM

Accutest Job Number: T30410 Client: Enclana Date/Time Received: 06/04/09 910
 # of Coolers Received: 1 Thermometer #: 12-1 Temperature Adjustment Factor: -0.4
 Cooler Temps: #1: 24.0 #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEx UPS Accutest Courier Greyhound Delivery Other
 Airbill Numbers: _____

COOLER INFORMATION

- ☐ Custody seal missing or not intact
☒ Temperature criteria not met
☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
☐ Sample D/T unclear or missing
☐ Analyses unclear or missing
☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
☐ VOC vials have headspace
☐ Sample labels missing or illegible
☐ ID on COC does not match label(s)
☐ D/T on COC does not match label(s)
☐ Sample/Bottles rcvd but no analysis on COC
☐ Sample listed on COC, but not received
☐ Bottles missing for requested analysis
☐ Insufficient volume for analysis
☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
☐ Trip Blank received but not on COC
☐ Trip Blank not intact
☐ Received Water Trip Blank
☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

1. No ice came in a box.

TECHNICIAN SIGNATURE/DATE: [Signature] 06/04/09

INFORMATION AND SAMPLE LABELING VERIFIED BY: GC 6.49

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: 6-4-9

By Accutest Representative: [Signature] Via: Phone Email

Client Instructions: _____

Okay for metals - no ice.

L:\mwalker\forms\samplemanagement

T30410A: Chain of Custody

Page 2 of 3



07/01/09

Technical Report for

EnCana

F11 E Background

Accutest Job Number: T30389

Sampling Date: 06/01/09

Report to:

EnCana

brett.middleton@encana.com

ATTN: Brett Middleton

Total number of pages in report: 9



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.

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Table of Contents

-1-

Section 1: Sample Summary 3

Section 2: Sample Results 4

2.1: T30389-1: F11 E BACKGROUND 5

Section 3: Misc. Forms 6

3.1: Chain of Custody 7



Sample Summary

EnCana
F11 E Background

Job No: T30389

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
T30389-1	06/01/09	16:20 BM	06/03/09	SO	Soil	F11 E BACKGROUND

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



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	F11 E BACKGROUND	Date Sampled:	06/01/09
Lab Sample ID:	T30389-1	Date Received:	06/03/09
Matrix:	SO - Soil	Percent Solids:	92.1
Project:	F11 E Background		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	3.5	0.58	0.12	mg/kg	1	06/03/09	06/03/09 NS	SW846 6010B ¹	SW846 3050B ²
Boron	0.63 B	5.8	0.12	mg/kg	1	06/03/09	06/03/09 NS	SW846 6010B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4095
(2) Prep QC Batch: MP9606

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

10165 Harwin Drive, Ste. 150, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # T30349

[illegible]

T30389: Chain of Custody

Page 1 of 3

SAMPLE INSPECTION FORM

Accutest Job Number: T30389 Client: Encana Oil & Gas Date/Time Received: 6-3-9 900
 # of Coolers Received: 1 Thermometer #: IR-1 Temperature Adjustment Factor: -0.4
 Cooler Temps: #1: 5.0°C #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other
 Airbill Numbers: _____

COOLER INFORMATION

- ☐ Custody seal missing or not intact
- ☐ Temperature criteria not met
- ☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
- ☐ Sample D/T unclear or missing
- ☐ Analyses unclear or missing
- ☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
- ☐ VOC vials have headspace
- ☐ Sample labels missing or illegible
- ☐ ID on COC does not match label(s)
- ☐ D/T on COC does not match label(s)
- ☐ Sample/Bottles rcvd but no analysis on COC
- ☐ Sample listed on COC, but not received
- ☐ Bottles missing for requested analysis
- ☐ Insufficient volume for analysis
- ☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
- ☐ Trip Blank received but not on COC
- ☐ Trip Blank not intact
- ☐ Received Water Trip Blank
- ☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: [Signature] 6-3-9
 INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature] 06/03/09

CORRECTIVE ACTIONS

Client Representative Notified: _____

Date: _____

By Accutest Representative: _____

Via: Phone Email

Client Instructions:

\\nwalker\form\samplemanagement

T30389: Chain of Custody

Page 2 of 3

SAMPLE RECEIPT LOG

JOB #: T30389 DATE/TIME RECEIVED: 6-3-9 920

CLIENT: Encana Oil & Gas INITIALS: EC

[illegible]

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other

LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer

Rev 8/13/01 ewp

T30389: Chain of Custody

Page 3 of 3



07/14/09

Technical Report for

EnCana

F11 E Background

Accutest Job Number: T30389A

Sampling Date: 06/01/09

Report to:

EnCana
2717 Co. Rd. 215
Parachute, CO 81635
brett.middleton@encana.com; christopher.hines@encana.com

ATTN: Brett Middleton

Total number of pages in report: **15**



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.

Paul K Canevaro

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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

Table of Contents

-1-

Section 1: Sample Summary

Section 2: Sample Results

2.1: T30389-1A: F11 E BACKGROUND

Section 3: Misc. Forms

3.1: Chain of Custody

Section 4: Metals Analysis - QC Data Summaries

4.1: Prep QC MP9845: B

3

4

5

6

7

10

11



Sample Summary

EnCana

Job No: T30389A

F11 E Background

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
T30389-1A	06/01/09	16:20 BM	06/03/09	AQ	Water Extract	F11 E BACKGROUND



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	F11 E BACKGROUND	Date Sampled:	06/01/09
Lab Sample ID:	T30389-1A	Date Received:	06/03/09
Matrix:	AQ - Water Extract	Percent Solids:	92.1
Project:	F11 E Background		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Boron	269	200	4.2	ug/l	1	07/13/09	07/14/09 NS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4165
(2) Prep QC Batch: MP9845

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

10165 Harwin Drive, Ste. 150, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

6	FED-EX Tracking #	Bottle Order Control #
	Accutest Quote #	Accutest Job # T30349

[illegible]

T30389A: Chain of Custody

Page 1 of 3

SAMPLE INSPECTION FORM

Accutest Job Number: T30389 Client: Encana Oil & Gas Date/Time Received: 6-3-9 900
 # of Coolers Received: 1 Thermometer #: IR-1 Temperature Adjustment Factor: -0.4
 Cooler Temps: #1: 5.0°C #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other
 Airbill Numbers: _____

COOLER INFORMATION

- ☐ Custody seal missing or not intact
- ☐ Temperature criteria not met
- ☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
- ☐ Sample D/T unclear or missing
- ☐ Analyses unclear or missing
- ☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
- ☐ VOC vials have headspace
- ☐ Sample labels missing or illegible
- ☐ ID on COC does not match label(s)
- ☐ D/T on COC does not match label(s)
- ☐ Sample/Bottles rcvd but no analysis on COC
- ☐ Sample listed on COC, but not received
- ☐ Bottles missing for requested analysis
- ☐ Insufficient volume for analysis
- ☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
- ☐ Trip Blank received but not on COC
- ☐ Trip Blank not intact
- ☐ Received Water Trip Blank
- ☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: [Signature] 6-3-9
 INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature] 06/03/09

CORRECTIVE ACTIONS

Client Representative Notified: _____

Date: _____

By Accutest Representative: _____

Via: Phone Email

Client Instructions:

\\nwalker\form\samplemanagement

T30389A: Chain of Custody

Page 2 of 3



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: T30389A
Account: ENCACOP - EnCana
Project: F11 E Background

QC Batch ID: MP9845
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/13/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	400	33	34		
Antimony	10	4.5	6		
Arsenic	10	3.5	4		
Barium	400	.28	5.4		
Beryllium	10	.22	.4		
Boron	200	2.2	4.2	-11	<200
Cadmium	8.0	.5	.6		
Calcium	10000	11	70		
Chromium	20	2.2	3.8		
Cobalt	100	1	1.6		
Copper	50	1.2	12		
Iron	200	26	26		
Lead	6.0	3.2	3.4		
Magnesium	10000	13	16		
Manganese	30	.4	15		
Molybdenum	20	1.9	2.6		
Nickel	80	1.9	6.4		
Potassium	10000	110	110		
Selenium	10	6.5	6.4		
Silver	20	1.7	1.6		
Sodium	10000	260	270		
Strontium	40	.34	.8		
Thallium	20	6.5	5.2		
Tin	40	3.6	5.8		
Titanium	40	.6	.6		
Vanadium	100	1.2	1.2		
Zinc	40	.98	8.2		

Associated samples MP9845: T30389-1A

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: T30389A
Account: ENCACOP - EnCana
Project: F11 E Background

QC Batch ID: MP9845
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/13/09

07/13/09

Metal	T32687-4A Original	DUP	RPD	QC Limits	T32687-4A Original	MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Boron	3170	1940	48.1*(a)	0-20	3170	8700	1600	346.0N	80-120
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP9845: T30389-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T30389A
Account: ENCACOP - EnCana
Project: F11 E Background

QC Batch ID: MP9845
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/13/09

Metal	T32687-4A Original	MSD	Spikelot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron	3170	8040	1590	305.6N	7.9	20
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP9845: T30389-1A

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: T30389A
Account: ENCACOP - EnCana
Project: F11 E Background

QC Batch ID: MP9845
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/13/09

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1850	1600	115.6	80-120
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP9845: T30389-1A

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

4.1.3
4

SERIAL DILUTION RESULTS SUMMARY

Login Number: T30389A
 Account: ENCACOP - EnCana
 Project: F11 E Background

QC Batch ID: MP9845
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 07/13/09

Metal	T32687-4A		QC	
	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1600	1580	0.9	0-10
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP9845: T30389-1A

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



07/24/09

Technical Report for

EnCana

F11E Pit Closure

Accutest Job Number: T33767

Sampling Date: 07/21/09

Report to:

EnCana
2717 Co. Rd. 215
Parachute, CO 81635
bradley.kieding@encana.com; christopher.hines@encana.com
ATTN: Chris Hines

Total number of pages in report: **16**



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.

Paul K Canevaro

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary 3

Section 2: Sample Results 4

2.1: T33767-1: F11E-BACKGROUND-072109 5

2.2: T33767-2: F11E-PIT-072109 6

Section 3: Misc. Forms 7

3.1: Chain of Custody 8

Section 4: Metals Analysis - QC Data Summaries 11

4.1: Prep QC MP9910: As 12



Sample Summary

EnCana

F11E Pit Closure

Job No: T33767

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
T33767-1	07/21/09	14:30 BM	07/23/09	SO	Soil	F11E-BACKGROUND-072109
T33767-2	07/21/09	14:00 BM	07/23/09	SO	Soil	F11E-PIT-072109

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



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	F11E-BACKGROUND-072109	Date Sampled:	07/21/09
Lab Sample ID:	T33767-1	Date Received:	07/23/09
Matrix:	SO - Soil	Percent Solids:	85.8
Project:	F11E Pit Closure		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.1	0.63	0.13	mg/kg	1	07/23/09	07/23/09 NS	SW846 6010B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4185
(2) Prep QC Batch: MP9910

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	F11E-PIT-072109	Date Sampled:	07/21/09
Lab Sample ID:	T33767-2	Date Received:	07/23/09
Matrix:	SO - Soil	Percent Solids:	81.2
Project:	F11E Pit Closure		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.8	0.68	0.14	mg/kg	1	07/23/09	07/23/09 NS	SW846 6010B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4185
(2) Prep QC Batch: MP9910

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770

[illegible]

T33767: Chain of Custody

Page 1 of 3

SAMPLE INSPECTION FORM

Accutest Job Number: T33767 Client: Encona Oil & Gas (USA) Inc Date/Time Received: 7-23-9 930
 # of Coolers Received: 1 Thermometer #: FR-1 Temperature Adjustment Factor: 1.4
 Cooler Temps: #1: 4.9°C #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: ☒ FEDEX ☐ UPS ☐ Accutest Courier ☐ Greyhound ☐ Delivery ☐ Other
 Airbill Numbers: _____

COOLER INFORMATION

- ☐ Custody seal missing or not intact
- ☐ Temperature criteria not met
- ☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
- ☐ Sample D/T unclear or missing
- ☐ Analyses unclear or missing
- ☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
- ☐ VOC vials have headspace
- ☐ Sample labels missing or illegible
- ☐ ID on COC does not match label(s)
- ☐ D/T on COC does not match label(s)
- ☐ Sample/Bottles rec'd but no analysis on COC
- ☐ Sample listed on COC, but not received
- ☐ Bottles missing for requested analysis
- ☐ Insufficient volume for analysis
- ☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
- ☐ Trip Blank received but not on COC
- ☐ Trip Blank not intact
- ☐ Received Water Trip Blank
- ☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: _____

INFORMATION AND SAMPLE LABELING VERIFIED BY: _____

CORRECTIVE ACTIONS

Client Representative Notified: _____

Date: _____

By Accutest Representative: _____

Via: ☐ Phone ☐ Email

Client Instructions:

\\mwalker\form\samplemanagement

T33767: Chain of Custody

Page 2 of 3



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: T33767
Account: ENCACOP - EnCana
Project: File Pit Closure

QC Batch ID: MP9910
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 07/23/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.82	2.2		
Antimony	0.50	.11	.14		
Arsenic	0.50	.089	.1	-0.036	<0.50
Barium	10	.007	.03		
Beryllium	0.25	.0055	.01		
Boron	5.0	.054	.11		
Cadmium	0.25	.013	.05		
Calcium	250	.27	.86		
Chromium	0.50	.055	.035		
Cobalt	2.5	.025	.09		
Copper	1.3	.029	.065		
Iron	5.0	.65	1.1		
Lead	0.50	.079	.2		
Magnesium	250	.34	.58		
Manganese	0.75	.01	.035		
Molybdenum	0.50	.048	.075		
Nickel	2.0	.048	.065		
Potassium	250	2.7	16		
Selenium	0.50	.16	.12		
Silver	0.50	.043	.04		
Sodium	250	6.5	13		
Strontium	1.0	.0085	.025		
Thallium	0.50	.16	.25		
Tin	1.0	.09	.12		
Titanium	1.0	.015	.045		
Vanadium	2.5	.03	.06		
Zinc	1.0	.025	.2		

Associated samples MP9910: T33767-1, T33767-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T33767
Account: ENCACOP - EnCana
Project: F11E Pit Closure

QC Batch ID: MP9910
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 07/23/09

07/23/09

Metal	T33767-1		QC	T33767-1		Spikelot	% Rec	QC
	Original	DUP	RPD	Limits	Original	MS		Limits
Aluminum								
Antimony								
Arsenic	5.1	4.8	6.1	0-20	5.1	28.2	25.6	90.1
Barium								80-120
Beryllium								
Boron								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Molybdenum								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Strontium								
Thallium								
Tin								
Titanium								
Vanadium								
Zinc								

Associated samples MP9910: T33767-1, T33767-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T33767
Account: ENCACOP - EnCana
Project: File Pit Closure

QC Batch ID: MP9910
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 07/23/09

Metal	T33767-1 Original	MSD	Spikelot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	5.1	27.8	25.3	89.6	1.4	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP9910: T33767-1, T33767-2

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T33767
Account: ENCACOP - EnCana
Project: F11E Pit Closure

QC Batch ID: MP9910
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 07/23/09

Metal	LCS Result	Spikelot MPLCD050	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	276	280	98.6	81-119
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP9910: T33767-1, T33767-2

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

4.1.3
4

SERIAL DILUTION RESULTS SUMMARY

Login Number: T33767
Account: ENCACOP - EnCana
Project: F11E Pit Closure

QC Batch ID: MP9910
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/23/09

Metal	T33767-1		%DIF	QC Limits
	Original	SDL 1:5		
Aluminum				
Antimony				
Arsenic	80.3	88.1	9.7	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP9910: T33767-1, T33767-2

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