

Analytes (BDL = Below Detection Limit; ND = Non Detect)

Location	Sample Date:	Sample Matrix	Matrix Notes	Allowable Concentration -->	Organic Compounds in Soil (mg/kg [ppm])																	Inorganics in Soil			Metals in Soil (mg/kg [ppm])															
					TPH (total volatile and extractable petroleum hydrocarbons)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Benzo(A)pyrene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-C,D)pyrene	Naphthalene	Pyrene	EC (<4 mmhos/cm or 2x background)	SAR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nickel (soluble salts)	Selenium	Silver	Zinc	
A28B	03/02/10	Cuttings			104.4	15	89.4	0.421	0.554	ND	0.249	ND	0.0211	0.136	0.178	0.07	0.0585	0.116	0.0252	0.18	0.0075	0.058	0.018	0.0857	3.04	9.6	8.31	17.9	4280	0.88	32.9	1.7	29.3	14.8	0.034	22.8	1.4	0.062	64.5	
A28B	08/26/10	Cuttings					BDL										0.12		0.028																					
A28B	09/26/12	Cuttings	P27 cuttings col	40	BDL	40	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.4	16	8.2	1.4	4500	BDL	12	BDL	13	5.9	0.037	9.5	1.3	BDL	36	
A28B	09/26/12	Cuttings	P27 cuttings col	140	BDL	140	0.003	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.6	16	8.2	2												



Technical Report for

ENCANA

A28B Cuttings Sample

Accutest Job Number: T48583

Sampling Date: 03/02/10

Report to:

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Parachute, CO 81635
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ATTN: Chris Hines

Total number of pages in report: **53**



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

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Certifications: TX (T104704220-09C-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.



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Sample Summary

ENCANA

Job No: T48583

A28B Cuttings Sample

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
T48583-1	03/02/10	12:50 AS	03/03/10	SO	Soil	A28B-CUTTINGS-030210
T48583-1A	03/02/10	12:50 AS	03/03/10	SO	Soil	A28B-CUTTINGS-030210

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

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: ENCANA

Job No T48583

Site: A28B Cuttings Sample

Report Date 3/16/2010 6:53:35 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 03/02/2010 and were received at Accutest on 03/03/2010 properly preserved, at 4.8 Deg. C and intact. These Samples received an Accutest job number of T48583. 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.

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: VY2437
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T48601-16MS, T48601-16MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP14211
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T48139-2RMS, T48139-2RMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Naphthalene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 2-Methylnaphthalene, Naphthalene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Recovery(s) for 1-Methylnaphthalene, 2-Methylnaphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- T48583-1: Internal standards are not within the advisory limits due to a matrix interference. Confirmed by reanalysis.

Volatiles by GC By Method SW846 8015

Matrix SO	Batch ID: GEE2655
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T48583-1MS, T48583-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846 8015 M

Matrix SO	Batch ID: OP14207
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T48584-1MS, T48584-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for TPH (C10-C28) are outside control limits. Probable cause due to matrix interference.

Metals By Method SW846 6010B

Matrix AQ	Batch ID: MP11280
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T48644-1ADUP, T48644-1ASDL were used as the QC samples for metals.

Matrix SO	Batch ID: MP11256
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T47925-1RDUP, T47925-1RMS, T47925-1RMSD, T47925-1RSDL, T47925-1RDUP were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Arsenic, Copper, Nickel are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Chromium, Nickel are outside control limits. High RPD due to possible matrix interference.
- Matrix Spike Recovery(s) for Barium, Lead, Zinc are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Duplicate for Copper, Lead, Barium, Nickel, Selenium are outside control limits for sample MP11256-D1. High RPD due to possible sample nonhomogeneity.
- RPD(s) for MSD for Arsenic, Barium, Chromium, Copper, Lead, Nickel are outside control limits for sample MP11256-S2. High RPD due to possible matrix interference.
- MP11256-D1 for Nickel: RPD acceptable due to low duplicate and sample concentrations.
- MP11256-D1 for Selenium: RPD acceptable due to low duplicate and sample concentrations.
- MP11256-D1 for Barium: RPD acceptable due to low duplicate and sample concentrations.

Metals By Method SW846 7471A

Matrix SO	Batch ID: MP11321
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T48664-1DUP, T48664-1MS, T48664-1MSD were used as the QC samples for metals.

Wet Chemistry By Method EPA 120.1

Matrix AQ **Batch ID:** GN21184

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T47901-2DUP were used as the QC samples for Specific Conductivity.

Wet Chemistry By Method LADNR29B

Matrix SO **Batch ID:** MP11280

- T48583-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

Wet Chemistry By Method SM 2540 G

Matrix SO **Batch ID:** GN21248

- Sample(s) T48733-1DUP were used as the QC samples for Solids, Percent.

Wet Chemistry By Method SW846 3060/7196A

Matrix SO **Batch ID:** GN21221

- All method blanks for this batch meet method specific criteria.
- Sample(s) T48235-1DUP, T48235-1MS were used as the QC samples for Chromium, Hexavalent.

Wet Chemistry By Method SW846 6010/7196A M

Matrix SO **Batch ID:** R21492

- T48583-1 for Chromium, Trivalent: Calculated as: $(\text{Chromium}) - (\text{Chromium, Hexavalent})$

Wet Chemistry By Method SW846 9045C

Matrix SO **Batch ID:** GN21204

- Sample(s) T48644-1DUP were used as the QC samples for pH.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Sample Results

Report of Analysis

Report of Analysis

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Client Sample ID: A28B-CUTTINGS-030210	
Lab Sample ID: T48583-1	Date Sampled: 03/02/10
Matrix: SO - Soil	Date Received: 03/03/10
Method: SW846 8260B	Percent Solids: 76.0
Project: A28B Cuttings Sample	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y0038313.D	1	03/05/10	JL	n/a	n/a	VY2437
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.26 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	421	390	55	ug/kg	
108-88-3	Toluene	554	390	74	ug/kg	
100-41-4	Ethylbenzene	ND	390	71	ug/kg	
1330-20-7	Xylene (total)	249	1200	160	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-121%
2037-26-5	Toluene-D8	96%		76-132%
460-00-4	4-Bromofluorobenzene	91%		73-165%
17060-07-0	1,2-Dichloroethane-D4	78%		57-122%

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: A28B-CUTTINGS-030210	
Lab Sample ID: T48583-1	Date Sampled: 03/02/10
Matrix: SO - Soil	Date Received: 03/03/10
Method: SW846 8270C BY SIM SW846 3550B	Percent Solids: 76.0
Project: A28B Cuttings Sample	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	H37299.D	1	03/08/10	SC	03/04/10	OP14211	EH2000
Run #2 ^a	H37312.D	1	03/09/10	SC	03/04/10	OP14211	EH2001

Run #	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.7	1.5	ug/kg	
208-96-8	Acenaphthylene	ND	8.7	3.1	ug/kg	
120-12-7	Anthracene	21.1	8.7	1.7	ug/kg	
56-55-3	Benzo(a)anthracene	136	8.7	1.4	ug/kg	
50-32-8	Benzo(a)pyrene	58.5	8.7	4.7	ug/kg	
205-99-2	Benzo(b)fluoranthene	178	8.7	4.6	ug/kg	
191-24-2	Benzo(g,h,i)perylene	83.8	8.7	8.7	ug/kg	
207-08-9	Benzo(k)fluoranthene	65.8	8.7	5.7	ug/kg	
218-01-9	Chrysene	116	8.7	2.2	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	25.2	8.7	8.4	ug/kg	
206-44-0	Fluoranthene	180	8.7	1.9	ug/kg	
86-73-7	Fluorene	7.5	8.7	3.1	ug/kg	J
193-39-5	Indeno(1,2,3-cd)pyrene	58.1	8.7	6.5	ug/kg	
90-12-0	1-Methylnaphthalene	9.9	8.7	1.6	ug/kg	
91-57-6	2-Methylnaphthalene	23.7	8.7	1.5	ug/kg	
91-20-3	Naphthalene	18.4	8.7	1.3	ug/kg	
85-01-8	Phenanthrene	137	8.7	1.2	ug/kg	
129-00-0	Pyrene	85.7	8.7	3.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	30%	26%	10-127%
321-60-8	2-Fluorobiphenyl	19%	15%	11-133%
1718-51-0	Terphenyl-d14	50%	65%	15-187%

(a) Internal standards are not within the advisory limits due to a matrix interference. Confirmed by reanalysis.

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

3.1
3

Client Sample ID: A28B-CUTTINGS-030210	Date Sampled: 03/02/10
Lab Sample ID: T48583-1	Date Received: 03/03/10
Matrix: SO - Soil	Percent Solids: 76.0
Method: SW846 8015	
Project: A28B Cuttings Sample	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE052458.D	1	03/08/10	FI	n/a	n/a	GEE2655
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.26 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	15.0	7.8	0.47	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	108%		46-127%
98-08-8	aaa-Trifluorotoluene	112%		44-120%

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

3.1
3

Client Sample ID: A28B-CUTTINGS-030210	Date Sampled: 03/02/10
Lab Sample ID: T48583-1	Date Received: 03/03/10
Matrix: SO - Soil	Percent Solids: 76.0
Method: SW846 8015 M SW846 3550B	
Project: A28B Cuttings Sample	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CC218330.D	1	03/05/10	EM	03/04/10	OP14207	GCC1068
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	89.4	11	3.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	108%		33-115%		

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

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

Report of Analysis

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Client Sample ID: A28B-CUTTINGS-030210	Date Sampled: 03/02/10
Lab Sample ID: T48583-1	Date Received: 03/03/10
Matrix: SO - Soil	Percent Solids: 76.0
Project: A28B Cuttings Sample	

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	17.9	0.77	0.15	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Barium	4280	77	0.23	mg/kg	5	03/04/10	03/08/10 NS	SW846 6010B ²	SW846 3050B ⁴
Cadmium	0.88	0.39	0.077	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Chromium	34.6	0.77	0.054	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Copper	29.3	1.9	0.10	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Lead	14.8	0.77	0.31	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Mercury	0.034	0.022	0.00086	mg/kg	1	03/16/10	03/16/10 TW	SW846 7471A ³	SW846 7471A ⁵
Nickel	22.8	3.1	0.10	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Selenium	1.4	0.77	0.19	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Silver	0.062 U	0.77	0.062	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴
Zinc	64.5	1.5	0.31	mg/kg	1	03/04/10	03/06/10 NS	SW846 6010B ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA4579
- (2) Instrument QC Batch: MA4582
- (3) Instrument QC Batch: MA4603
- (4) Prep QC Batch: MP11256
- (5) Prep QC Batch: MP11321

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: A28B-CUTTINGS-030210	Date Sampled: 03/02/10
Lab Sample ID: T48583-1	Date Received: 03/03/10
Matrix: SO - Soil	Percent Solids: 76.0
Project: A28B Cuttings Sample	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	1.7 B	2.0	mg/kg	1	03/09/10 10:00	KD	SW846 3060/7196A
Chromium, Trivalent ^a	32.9	2.8	mg/kg	1	03/09/10 10:00	KD	SW846 6010/7196A M
Solids, Percent	76		%	1	03/07/10	MR	SM 2540 G
Specific Conductivity	3040	1.0	umhos/cm	1	03/04/10 14:30	SS	EPA 120.1
pH	8.31		su	1	03/04/10 16:00	SS	SW846 9045C

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: A28B-CUTTINGS-030210	Date Sampled: 03/02/10
Lab Sample ID: T48583-1A	Date Received: 03/03/10
Matrix: SO - Soil	Percent Solids: 76.0
Project: A28B Cuttings Sample	

SAR Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	1080	25	0.18	mg/l	5	03/10/10	03/10/10 NS	SW846 6010B ¹	LADNR 29B ²
Magnesium	498	25	0.039	mg/l	5	03/10/10	03/10/10 NS	SW846 6010B ¹	LADNR 29B ²
Sodium	1520	50	1.3	mg/l	10	03/10/10	03/10/10 NS	SW846 6010B ¹	LADNR 29B ²

(1) Instrument QC Batch: MA4585

(2) Prep QC Batch: MP11280

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:	A28B-CUTTINGS-030210	Date Sampled:	03/02/10
Lab Sample ID:	T48583-1A	Date Received:	03/03/10
Matrix:	SO - Soil	Percent Solids:	76.0
Project:	A28B Cuttings Sample		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	9.60		ratio	1	03/10/10 13:34	NS	LADNR29B

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Constituents of Concern: Allowable Concentrations and Analytical Methods (COGCC Table 910-1)

CONTAMINANT OF CONCERN	CONCENTRATIONS ¹	ANALYTICAL METHOD (SW600)
<i>Organic Compounds in Soil</i>		
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg	8015
Benzene	0.17 mg/kg ²	8260B
Toluene	85 mg/kg ²	8260B
Ethylbenzene	100 mg/kg ²	8260B
Xylenes (total)	175 mg/kg ²	8260B
Acenaphthene	1,000 mg/kg ²	8270C
Anthracene	1,000 mg/kg ²	8270C
Benzo(A)anthracene	0.22 mg/kg ²	8270C
Benzo(B)fluoranthene	0.22 mg/kg ²	8270C
Benzo(K)fluoranthene	2.2 mg/kg ²	8270C
Chrysene	22 mg/kg ²	8270C
Dibenz(A,H)anthracene	0.022 mg/kg ²	8270C
Fluoranthene	1,000 mg/kg ²	8270C
Fluorene	1,000 mg/kg ²	8270C
Indeno(1,2,3-C,D)pyrene	0.22 mg/kg ²	8270C
Naphthalene	23 mg/kg ²	8270C
Pyrene	1,000 mg/kg ²	8270C
<i>Inorganics in Soils</i>		
Electrical Conductivity (EC)	<4 mmhos/cm or 2x background	4050
Sodium Adsorption Ratio (SAR)	<12 ³	LADNR28B
PH	5-9	9045C
<i>Metals in Soils</i>		
Arsenic	0.38 mg/kg ⁴	8010B
Barium	15,000 mg/kg ⁵	8010B
Cadmium	70 mg/kg ⁶	6010B
Chromium (II)	120,000 mg/kg ⁷	6010B
Chromium (VI)	23 mg/kg ⁸	6010B
Copper	3,100 mg/kg ⁹	6010B
Lead (inorganic)	400 mg/kg ⁹	6010B
Mercury	23 mg/kg ⁹	6010B
Nickel (soluble salts)	1,600 mg/kg ⁹	6010B
Selenium	350 mg/kg ⁹	6010B
Silver	130 mg/kg ⁹	6010B
Zinc	123,000 mg/kg ⁹	6010B
<i>Liquid Hydrocarbons in Soils and Ground Water</i>		
Liquid hydrocarbons including condensate and oil	Below detection level	Visual

COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

1 Concentration shall be given to background levels in native soils and ground water.
 2 Concentrations taken from COGCC Table 910-1 (Colorado Soil Evaluation Values (December 2007)).
 3 Concentrations taken from COPHE-WQCCB Table 1 (Colorado Ground Water Quality Standards for Human Consumption (December 2007)).
 4 For this range of standards, the first number in the range is a strictly health-based standard, the WQCC's established methodology for human health-based standards. The second number in the range is a maximum contaminant level (MCL), established under the Federal Safe Drinking Water Act which has been 900-22 As of April 1, 2009, 900-23 As of April 1, 2009.
 5 Determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. The WQCC intends that control requirements for this chemical be implemented to attain a level of ambient water quality that is at least equal to the first number in the range (e.g., 1,000 mg/kg²), where ground water quality exceeds the first number in the range due to a release of contaminants that occurred prior to September 14, 2004 (7-1).
 6 The table value for these inorganic constituents is taken from the COPHE-HMMWD Table 1 (Colorado Soil Evaluation Values (December 2007)). However, because these values are high, it is possible that site-specific geochemical conditions may exist that could allow these constituents to migrate into ground water at levels exceeding ground water standards even though the concentrations are below the table values. Therefore, when these constituents are present as contaminants, a secondary evaluation of their leachability must be performed to ensure ground water protection.
 7 Is more protective, and 2) whenever the WQCC has adopted alternative, site-specific standards for the chemical, the site-specific standards shall apply instead of these statewide standards.
 8 Analyzed by USDA, Agricultural Handbook 80 method (20B) with soluble cations determined by method (2), Method (20B) = estimation of exchangeable sodium percentage and exchangeable potassium percentage from soluble cations. Method (2) = saturated paste method (note: each method requires at least 500 grams). If soils are saturated, USDA Agricultural Handbook 60 with soluble cations determined by method (2A) saturation extraction method.
 9 The table value for these inorganic constituents is taken from the COPHE-HMMWD Table 1 (Colorado Soil Evaluation Values (December 2007)).

SAMPLE INSPECTION FORM

Accutest Job Number: T48583 Client: Encana Date/Time Received: 3-3-10 9:15
 # of Coolers Received: 1 Thermometer #: IR-1 Temperature Adjustment Factor: +4 °C
 Cooler Temps: #1: 4.8 °C #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other
 Airbill Numbers: 8709-8619-8765

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] 3-3-10

INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature] 3-3-10

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: _____
 By Accutest Representative: _____ Via: Phone Email
 Client Instructions: _____

I:\mwalker\form\samplemanagement



GC/MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2437-MB	Y0038302.D	1	03/04/10	JL	n/a	n/a	VY2437

The QC reported here applies to the following samples:

Method: SW846 8260B

T48583-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.0	0.70	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	0.90	ug/kg	
108-88-3	Toluene	ND	5.0	0.95	ug/kg	
1330-20-7	Xylene (total)	ND	15	2.1	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	99% 70-121%
2037-26-5	Toluene-D8	96% 76-132%
460-00-4	4-Bromofluorobenzene	88% 73-165%
17060-07-0	1,2-Dichloroethane-D4	80% 57-122%

Blank Spike Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2437-BS	Y0038300.D	1	03/04/10	JL	n/a	n/a	VY2437

The QC reported here applies to the following samples:

Method: SW846 8260B

T48583-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.7	95	70-114
100-41-4	Ethylbenzene	50	43.1	86	60-119
108-88-3	Toluene	50	42.9	86	68-115
1330-20-7	Xylene (total)	150	134	89	61-115

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	70-121%
2037-26-5	Toluene-D8	101%	76-132%
460-00-4	4-Bromofluorobenzene	98%	73-165%
17060-07-0	1,2-Dichloroethane-D4	83%	57-122%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T48601-16MS	Y0038306.D	1	03/05/10	JL	n/a	n/a	VY2437
T48601-16MSD	Y0038307.D	1	03/05/10	JL	n/a	n/a	VY2437
T48601-16	Y0038305.D	1	03/04/10	JL	n/a	n/a	VY2437

The QC reported here applies to the following samples:

Method: SW846 8260B

T48583-1

CAS No.	Compound	T48601-16 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	5.1 U	52.6	42.4	81	43.9	82	3	70-114/38
100-41-4	Ethylbenzene	5.1 U	52.6	38.7	74	40.6	76	5	60-119/40
108-88-3	Toluene	5.1 U	52.6	38.8	74	40.3	75	4	68-115/38
1330-20-7	Xylene (total)	15 U	158	121	77	126	78	4	61-115/39

CAS No.	Surrogate Recoveries	MS	MSD	T48601-16	Limits
1868-53-7	Dibromofluoromethane	99%	97%	99%	70-121%
2037-26-5	Toluene-D8	102%	101%	103%	76-132%
460-00-4	4-Bromofluorobenzene	96%	97%	104%	73-165%
17060-07-0	1,2-Dichloroethane-D4	78%	77%	76%	57-122%

5.3.1
5



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

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14211-MB	P09046.D	1	03/05/10	GJ	03/04/10	OP14211	EP429

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T48583-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	1.1	ug/kg	
208-96-8	Acenaphthylene	ND	6.7	2.3	ug/kg	
120-12-7	Anthracene	ND	6.7	1.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	6.7	1.1	ug/kg	
50-32-8	Benzo(a)pyrene	ND	6.7	3.6	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	6.7	3.5	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	6.7	6.7	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	6.7	4.3	ug/kg	
218-01-9	Chrysene	ND	6.7	1.6	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	6.7	6.4	ug/kg	
206-44-0	Fluoranthene	ND	6.7	1.5	ug/kg	
86-73-7	Fluorene	ND	6.7	2.4	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	6.7	5.0	ug/kg	
90-12-0	1-Methylnaphthalene	ND	6.7	1.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	6.7	1.2	ug/kg	
91-20-3	Naphthalene	ND	6.7	1.0	ug/kg	
85-01-8	Phenanthrene	ND	6.7	0.93	ug/kg	
129-00-0	Pyrene	ND	6.7	2.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
4165-60-0	Nitrobenzene-d5	58%	10-127%
321-60-8	2-Fluorobiphenyl	36%	11-133%
1718-51-0	Terphenyl-d14	54%	15-187%

Blank Spike Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14211-BS	P09047.D	1	03/05/10	GJ	03/04/10	OP14211	EP429

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T48583-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	167	60.8	36	18-118
208-96-8	Acenaphthylene	167	109	65	35-125
120-12-7	Anthracene	167	112	67	24-116
56-55-3	Benzo(a)anthracene	167	113	68	32-132
50-32-8	Benzo(a)pyrene	167	113	68	36-130
205-99-2	Benzo(b)fluoranthene	167	129	77	35-134
191-24-2	Benzo(g,h,i)perylene	167	124	74	18-149
207-08-9	Benzo(k)fluoranthene	167	110	66	30-131
218-01-9	Chrysene	167	110	66	37-124
53-70-3	Dibenzo(a,h)anthracene	167	133	80	23-150
206-44-0	Fluoranthene	167	123	74	28-118
86-73-7	Fluorene	167	91.4	55	32-106
193-39-5	Indeno(1,2,3-cd)pyrene	167	131	79	18-150
90-12-0	1-Methylnaphthalene	167	83.5	50	10-128
91-57-6	2-Methylnaphthalene	167	88.0	53	28-113
91-20-3	Naphthalene	167	66.4	40	31-106
85-01-8	Phenanthrene	167	106	64	37-112
129-00-0	Pyrene	167	102	61	24-132

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	65%	10-127%
321-60-8	2-Fluorobiphenyl	30%	11-133%
1718-51-0	Terphenyl-d14	50%	15-187%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14211-MS	P09057.D	1	03/05/10	GJ	03/04/10	OP14211	EP429
OP14211-MSD	P09058.D	1	03/05/10	GJ	03/04/10	OP14211	EP429
T48139-2R	P09056.D	1	03/05/10	GJ	03/04/10	OP14211	EP429
T48139-2R	P09052.D	20	03/05/10	GJ	03/04/10	OP14211	EP429

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T48583-1

CAS No.	Compound	T48139-2R ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	8.2	U	202	59.0	29	55.8	28	6	10-153/80
208-96-8	Acenaphthylene	10.1		202	132	60	126	57	5	10-144/71
120-12-7	Anthracene	7.9	J	202	118	55	111	51	6	10-176/57
56-55-3	Benzo(a)anthracene	4.8	J	202	119	57	107	51	11	10-174/73
50-32-8	Benzo(a)pyrene	8.2	U	202	113	56	105	52	7	10-182/74
205-99-2	Benzo(b)fluoranthene	8.2	U	202	124	62	120	59	3	10-188/86
191-24-2	Benzo(g,h,i)perylene	8.2	U	202	109	54	90.9	45	18	10-150/62
207-08-9	Benzo(k)fluoranthene	8.2	U	202	132	65	123	61	7	10-170/94
218-01-9	Chrysene	3.9	J	202	110	53	100	47	10	10-165/73
53-70-3	Dibenzo(a,h)anthracene	8.2	U	202	125	62	105	52	17	10-192/74
206-44-0	Fluoranthene	5.5	J	202	118	56	111	52	6	10-141/73
86-73-7	Fluorene	23.3		202	99.0	38	91.5	34	8	10-164/72
193-39-5	Indeno(1,2,3-cd)pyrene	8.2	U	202	122	61	102	50	18	10-150/73
90-12-0	1-Methylnaphthalene	2580	E	202	2380	-99* a	2470	-54* a	4	10-154/82
91-57-6	2-Methylnaphthalene	2310 b		202	724	-787* a	694	-799* a	4	10-171/75
91-20-3	Naphthalene	243		202	251	4*	233	-5*	7	10-138/82
85-01-8	Phenanthrene	26.2		202	122	48	116	44	5	10-191/77
129-00-0	Pyrene	4.1	J	202	101	48	87.7	41	14	10-150/66

CAS No.	Surrogate Recoveries	MS	MSD	T48139-2R	T48139-2R	Limits
4165-60-0	Nitrobenzene-d5	63%	66%	63%	52%	10-127%
321-60-8	2-Fluorobiphenyl	17%	17%	18%	42%	11-133%
1718-51-0	Terphenyl-d14	44%	37%	39%	44%	15-187%

(a) Outside control limits due to high level in sample relative to spike amount.
 (b) Result is from Run #2.



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEE2655-MB	EE052455.D	1	03/08/10	FI	n/a	n/a	GEE2655

The QC reported here applies to the following samples:

Method: SW846 8015

T48583-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	5.0	0.30	mg/kg	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	4-Bromofluorobenzene	109%	46-127%
98-08-8	aaa-Trifluorotoluene	112%	44-120%

7.1.1
7

Blank Spike Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEE2655-BS	EE052450.D	1	03/08/10	FI	n/a	n/a	GEE2655

The QC reported here applies to the following samples:

Method: SW846 8015

T48583-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	0.4	0.430	108	78-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	110%	46-127%
98-08-8	aaa-Trifluorotoluene	120%	44-120%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T48583-1MS	EE052461.D	1	03/08/10	FI	n/a	n/a	GEE2655
T48583-1MSD	EE052462.D	1	03/08/10	FI	n/a	n/a	GEE2655
T48583-1	EE052458.D	1	03/08/10	FI	n/a	n/a	GEE2655

The QC reported here applies to the following samples:

Method: SW846 8015

T48583-1

CAS No.	Compound	T48583-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	15.0	31.3	40.7	82	41.7	85	2	78-115/14

CAS No.	Surrogate Recoveries	MS	MSD	T48583-1	Limits
460-00-4	4-Bromofluorobenzene	107%	108%	108%	46-127%
98-08-8	aaa-Trifluorotoluene	117%	117%	112%	44-120%

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

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14207-MB	CC218316.D 1		03/04/10	EM	03/04/10	OP14207	GCC1068

The QC reported here applies to the following samples:

Method: SW846 8015 M

T48583-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	8.3	2.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	66% 33-115%

8.1.1

8

Blank Spike Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14207-BS	CC218317.D 1		03/04/10	EM	03/04/10	OP14207	GCC1068

The QC reported here applies to the following samples:

Method: SW846 8015 M

T48583-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH (C10-C28)	33	33.9	103	45-107

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	88%	33-115%

8.2.1

8

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T48583
Account: ENCACOP ENCANA
Project: A28B Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14207-MS	CC218318.D	1	03/04/10	EM	03/04/10	OP14207	GCC1068
OP14207-MSD	CC218319.D	1	03/04/10	EM	03/04/10	OP14207	GCC1068
T48584-1	CC218332.D	1	03/05/10	EM	03/04/10	OP14207	GCC1068

The QC reported here applies to the following samples:

Method: SW846 8015 M

T48583-1

CAS No.	Compound	T48584-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C10-C28)	122	45.5	103	-42* a	126	9* a	20	45-107/34

CAS No.	Surrogate Recoveries	MS	MSD	T48584-1	Limits
84-15-1	o-Terphenyl	90%	87%	90%	33-115%

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

8.3.1
8



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: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

QC Batch ID: MP11256
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 03/04/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.82	2.2		
Antimony	0.50	.11	.14		
Arsenic	0.50	.089	.1	-0.066	<0.50
Barium	10	.007	.03	0.0	<10
Beryllium	0.25	.0055	.01		
Boron	5.0	.054	.11		
Cadmium	0.25	.013	.05	-0.0020	<0.25
Calcium	250	.27	.86		
Chromium	0.50	.055	.035	-0.035	<0.50
Cobalt	2.5	.025	.09		
Copper	1.3	.029	.065	-0.015	<1.3
Iron	5.0	.65	1.1		
Lead	0.50	.079	.2	0.062	<0.50
Magnesium	250	.34	.58		
Manganese	0.75	.01	.035		
Molybdenum	0.50	.048	.075		
Nickel	2.0	.048	.065	-0.14	<2.0
Potassium	250	2.7	16		
Selenium	0.50	.16	.12	0.048	<0.50
Silver	0.50	.043	.04	0.0020	<0.50
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	-0.016	<1.0

Associated samples MP11256: T48583-1

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

9.1.1
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11256
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 03/04/10 03/04/10

Metal	T47925-1R Original	DUP	RPD	QC Limits	T47925-1R Original MS	Spikelot MPTW4	% Rec	QC Limits	
Aluminum									
Antimony									
Arsenic	16.8	14.0	18.2	0-20	16.8	38.1	28.9	73.8N	80-120
Barium	180	133	30.0 (a)	0-20	180	199	28.9	65.8 (c)	80-120
Beryllium									
Boron									
Cadmium	1.5	1.4	6.9	0-20	1.5	27.6	28.9	90.4	80-120
Calcium									
Chromium	27.2	24.5	10.4	0-20	27.2	51.5	28.9	84.2	80-120
Cobalt									
Copper	33.8	17.3	64.6*(b)	0-20	33.8	47.0	28.9	45.7N	80-120
Iron									
Lead	804	583	31.9*(b)	0-20	804	415	28.9	-1347.4c	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	23.8	18.8	23.5 (a)	0-20	23.8	43.4	28.9	67.9N	80-120
Potassium									
Selenium	0.0	1.5	200.0(a)	0-20	0.0	26.6	28.9	92.1	80-120
Silver	0.0	0.0	NC	0-20	0.0	27.5	28.9	95.3	80-120
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	193	174	10.4	0-20	193	215	28.9	76.2 (c)	80-120

Associated samples MP11256: T48583-1

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

(a) RPD acceptable due to low duplicate and sample concentrations.

(b) High RPD due to possible sample nonhomogeneity.

(c) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11256
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 03/04/10

Metal	T47925-1R Original MSD		SpikeLot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	16.8	47.5	28.4	108.0	22.0 (a)	20
Barium	180	161	28.4	-66.8(b)	21.1 (a)	20
Beryllium						
Boron						
Cadmium	1.5	28.0	28.4	93.2	1.4	20
Calcium						
Chromium	27.2	118	28.4	319.5N	78.5 (a)	20
Cobalt						
Copper	33.8	66.0	28.4	113.3	33.6 (a)	20
Iron						
Lead	804	1080	28.4	971.1(b)	89.0 (a)	20
Magnesium						
Manganese						
Molybdenum						
Nickel	23.8	66.4	28.4	149.9N	41.9 (a)	20
Potassium						
Selenium	0.0	26.4	28.4	92.9	0.8	20
Silver	0.0	27.1	28.4	95.3	1.5	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	193	253	28.4	211.1(b)	16.2	20

Associated samples MP11256: T48583-1

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

(a) High RPD due to possible matrix interference.

(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11256
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 03/04/10

Metal	LCS Result	Spikelot MPLCD054	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	147	158	93.0	82-118
Barium	368	348	105.7	81-119
Beryllium				
Boron				
Cadmium	178	187	95.2	82-118
Calcium				
Chromium	90.0	89.5	100.6	79-121
Cobalt				
Copper	137	129	106.2	84-117
Iron				
Lead	155	172	90.1	79-120
Magnesium				
Manganese				
Molybdenum				
Nickel	93.4	99	94.3	81-119
Potassium				
Selenium	137	148	92.6	78-121
Silver	64.0	66	97.0	66-134
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	373	394	94.7	80-119

Associated samples MP11256: T48583-1

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

9.1.3
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11256
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 03/04/10

Metal	T47925-1R		QC	
	Original	SDL 5:25	%DIF	Limits
Aluminum				
Antimony				
Arsenic	238	233	2.1	0-10
Barium	2540	2670	5.0	0-10
Beryllium				
Boron				
Cadmium	21.2	20.4	3.6	0-10
Calcium				
Chromium	385	412	7.0	0-10
Cobalt				
Copper	479	490	2.4	0-10
Iron				
Lead	11400	12100	6.5	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	338	332	1.9	0-10
Potassium				
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	2740	2920	6.6	0-10

Associated samples MP11256: T48583-1

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

9.1.4
 9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

QC Batch ID: MP11280
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B
Units: ug/l

Prep Date: 03/10/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	16	17		
Antimony	5.0	2.3	3		
Arsenic	5.0	1.8	2		
Barium	200	.14	2.7		
Beryllium	5.0	.11	.2		
Boron	100	1.1	2.1		
Cadmium	4.0	.25	.3		
Calcium	5000	5.4	35	112	<5000
Chromium	10	1.1	1.9		
Cobalt	50	.5	.8		
Copper	25	.58	5.9		
Iron	100	13	13		
Lead	3.0	1.6	1.7		
Magnesium	5000	6.7	7.8	24.7	<5000
Manganese	15	.2	7.6		
Molybdenum	10	.96	1.3		
Nickel	40	.95	3.2		
Potassium	5000	53	53		
Selenium	5.0	3.2	3.2		
Silver	10	.85	.8		
Sodium	5000	130	130	820	<5000
Strontium	20	.17	.4		
Thallium	10	3.2	2.6		
Tin	20	1.8	2.9		
Titanium	20	.3	.3		
Vanadium	50	.6	.6		
Zinc	20	.49	4.1		

Associated samples MP11280: T48583-1A

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

9.2.1
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11280
 Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B
 Units: ug/l

Prep Date: 03/10/10

Metal	T48644-1A		RPD	QC Limits
	Original	DUP		
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	145000	150000	3.4	0-20
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium	32300	32800	1.5	0-20
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	654000	656000	0.3	0-20
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP11280: T48583-1A

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

9.2.2
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11280
 Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B
 Units: ug/l

Prep Date: 03/10/10

Metal	T48644-1A		QC	
	Original	SDL 5:25	%DIF	Limits

Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	145000	145000	0.0	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium	32300	32500	0.4	0-10
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	654000	645000	1.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP11280: T48583-1A

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

9.2.3
 9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

QC Batch ID: MP11321
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 03/16/10

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.017	.0041	.00066	0.0029	<0.017

Associated samples MP11321: T48583-1

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: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11321
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 03/16/10 03/16/10

Metal	T48664-1 Original	DUP	RPD	QC Limits	T48664-1 Original MS	Spikelot HGTXWS1	% Rec	QC Limits	
Mercury	0.018	0.020	10.5	0-20	0.018	0.37	0.336	104.7	75-125

Associated samples MP11321: T48583-1

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: T48583
 Account: ENCACOP - ENCANA
 Project: A28B Cuttings Sample

QC Batch ID: MP11321
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 03/16/10

Metal	T48664-1 Original MSD	SpikeLot HGTXWS1	% Rec	MSD RPD	QC Limit
Mercury	0.018	0.40	0.336	113.8	7.8

Associated samples MP11321: T48583-1

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: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

QC Batch ID: MP11321
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 03/16/10

Metal	LCS Result	Spikelot HGLCD054 % Rec	QC Limits
Mercury	6.3	7.34	85.8 72-128

Associated samples MP11321: T48583-1

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



General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN21221	2.0	<2.0	mg/kg	40	41.0	102.0	80-120%
Specific Conductivity	GN21184	1.0	<1.0	umhos/cm				

Associated Samples:
Batch GN21184: T48583-1
Batch GN21221: T48583-1
(*) Outside of QC limits

10.1
10

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN21221	T48235-1	mg/kg	1.5	<2.0	0.3	0-20%
Solids, Percent	GN21248	T48733-1	%	80.5	80.8	0.4	0-5%
Specific Conductivity	GN21184	T47901-2	umhos/cm	4520	4520	0.0	0-20%
pH	GN21204	T48644-1	su	9.01	9.04	0.3	0-20%

Associated Samples:

Batch GN21184: T48583-1

Batch GN21204: T48583-1

Batch GN21221: T48583-1

Batch GN21248: T48583-1

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T48583
Account: ENCACOP - ENCANA
Project: A28B Cuttings Sample

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN21221	T48235-1	mg/kg	1.5	40	45.5	109.0	75-125%

Associated Samples:

Batch GN21221: T48583-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

10.3
10



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Chris Hines or Brad Kieding
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Report Summary

Tuesday September 07, 2010

Report Number: L476182


Samples Received: 08/28/10

Client Project: A28B CUTTINGS

Description: A28B Cuttings Management

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:


Jarred Willis, 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, NV - TN000032008A

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

September 07, 2010

Chris Hines or Brad Kieding
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

ESC Sample # : L476182-01

Date Received : August 28, 2010
Description : A28B Cuttings
Sample ID : A28B-CUTTINGS-082610

Site ID :

Project # : A28B CUTTINGS

Collected By : Blair K. Rollins
Collection Date : 08/26/10 10:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021B	08/30/10	5
Surrogate Recovery(%) a,a,a-Trifluorotoluene(PID)	104.		% Rec.	8021B	08/30/10	5
Polynuclear Aromatic Hydrocarbons						
Benzo(a)pyrene	0.12	0.0060	mg/kg	8270C-SIM	09/03/10	1
Dibenz(a,h)anthracene	0.028	0.0060	mg/kg	8270C-SIM	09/03/10	1
Surrogate Recovery						
Nitrobenzene-d5	77.6		% Rec.	8270C-SIM	09/03/10	1
2-Fluorobiphenyl	63.0		% Rec.	8270C-SIM	09/03/10	1
p-Terphenyl-d14	67.6		% Rec.	8270C-SIM	09/03/10	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: 09/06/10 08:44 Revised: 09/07/10 11:01

Summary of Remarks For Samples Printed
09/07/10 at 11:01:19

TSR Signing Reports: 358
R5 - Desired TAT

Create p-keys for projects. Enter project name as Project Number and Project Name. Log all samples to separate L#s. See L471333 when COC says see attached list. PAHs = SV8270PAHSIM. BTEX = 8021.

Sample: L476182-01 Account: ENCANACO Received: 08/28/10 09:00 Due Date: 09/03/10 00:00 RPT Date: 09/06/10 08:44
BTEX is for benzene only. PAHSIM is for Benzo(a)pyrene and Dibenz(a,h)anthracene only.



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EnCana Oil & Gas Inc. - CO
Chris Hines or Brad Kieding
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L476182

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September 07, 2010

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG495944	08/30/10 10:22
a,a,a-Trifluorotoluene(PID)		% Rec.	105.2	54-144	WG495944	08/30/10 10:22
Benzo(a)pyrene	< .006	mg/kg			WG496562	09/03/10 06:45
Dibenz(a,h)anthracene	< .006	mg/kg			WG496562	09/03/10 06:45
2-Fluorobiphenyl		% Rec.	76.65	21-120	WG496562	09/03/10 06:45
Nitrobenzene-d5		% Rec.	68.81	33-114	WG496562	09/03/10 06:45
p-Terphenyl-d14		% Rec.	94.48	18-142	WG496562	09/03/10 06:45

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0511	102.	76-113	WG495944
a,a,a-Trifluorotoluene(PID)				104.4	54-144	WG495944
Benzo(a)pyrene	mg/kg	.033	0.0280	84.8	47-118	WG496562
Dibenz(a,h)anthracene	mg/kg	.033	0.0263	79.6	41-124	WG496562
2-Fluorobiphenyl				82.83	21-120	WG496562
Nitrobenzene-d5				75.32	33-114	WG496562
p-Terphenyl-d14				100.9	18-142	WG496562

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/kg	0.0515	0.0511	103.	76-113	0.830	20	WG495944
a,a,a-Trifluorotoluene(PID)				104.3	54-144			WG495944
Benzo(a)pyrene	mg/kg	0.0270	0.0280	82.0	47-118	3.59	20	WG496562
Dibenz(a,h)anthracene	mg/kg	0.0264	0.0263	80.0	41-124	0.675	20	WG496562
2-Fluorobiphenyl				84.37	21-120			WG496562
Nitrobenzene-d5				72.25	33-114			WG496562
p-Terphenyl-d14				96.71	18-142			WG496562

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Benzene	mg/kg	0.199	0	.05	79.7	32-137	L476123-12	WG495944
a,a,a-Trifluorotoluene(PID)					100.6	54-144		WG495944

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Benzene	mg/kg	0.198	0.199	79.3	32-137	0.510	39	L476123-12	WG495944
a,a,a-Trifluorotoluene(PID)				102.4	54-144				WG495944

Batch number /Run number / Sample number cross reference

WG495944: R1355448: L476182-01
WG496562: R1363309: L476182-01

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Parachute, CO 81635

Quality Assurance Report
Level II

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September 07, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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2717 County Road 215, Suite 100
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Report Summary

Wednesday October 10, 2012

Report Number: L597799

Samples Received: 09/27/12

Client Project: A28B-P27

Description: A28B-P27 Cuttings

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:

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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Est. 1970

REPORT OF ANALYSIS

Chris Hines / Matt Kasten
 EnCana Oil & Gas Inc. - CO
 2717 County Road 215, Suite 100
 Parachute, CO 81635

October 10, 2012

Date Received : September 27, 2012
 Description : A28B-P27 Cuttings
 Sample ID : A28B-P27-CUT1-092612 10-18 IN
 Collected By : Matt Kasten
 Collection Date : 09/26/12 09:15

ESC Sample # : L597799-01
 Site ID : A28B-P27
 Project # : A28B-P27

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	10/04/12	1
Chromium,Trivalent	12.	2.0	mg/kg	Calc.	10/02/12	1
ORP	150		mV	2580	10/04/12	1
pH	8.2		su	9045D	10/03/12	1
Sodium Adsorption Ratio	16.			Calc.	09/29/12	1
Specific Conductance	2400		umhos/cm	9050AMod	10/04/12	1
Mercury	0.037	0.020	mg/kg	7471	09/29/12	1
Arsenic	1.4	1.0	mg/kg	6010B	10/02/12	1
Barium	4500	0.25	mg/kg	6010B	10/02/12	1
Cadmium	BDL	0.25	mg/kg	6010B	10/02/12	1
Chromium	12.	0.50	mg/kg	6010B	10/02/12	1
Copper	13.	1.0	mg/kg	6010B	10/02/12	1
Lead	5.9	0.25	mg/kg	6010B	10/02/12	1
Nickel	9.5	1.0	mg/kg	6010B	10/02/12	1
Selenium	1.3	1.0	mg/kg	6010B	10/02/12	1
Silver	BDL	0.50	mg/kg	6010B	10/02/12	1
Zinc	36.	1.5	mg/kg	6010B	10/02/12	1
Benzene	BDL	0.0025	mg/kg	8021/8015	10/01/12	5
Toluene	BDL	0.025	mg/kg	8021/8015	10/01/12	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	10/01/12	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	10/01/12	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	10/01/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.7		% Rec.	8021/8015	10/01/12	5
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021/8015	10/01/12	5
TPH (GC/FID) High Fraction	40.	20.	mg/kg	3546/DRO	10/08/12	5
Surrogate recovery(%)						
o-Terphenyl	33.2		% Rec.	3546/DRO	10/08/12	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Acenaphthene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Acenaphthylene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Benzo(a)anthracene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Benzo(a)pyrene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50

BDL - Below Detection Limit
 Det. Limit - Practical Quantitation Limit(PQL)
 L597799-01 (SV8270PAHSIM) - Dilution due to matrix
 L597799-01 (PH) - 8.2@21.4c
 L597799-01 (DRO) - low surrogate confirmed with previous extraction



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 Parachute, CO 81635

October 10, 2012

Date Received : September 27, 2012
 Description : A28B-P27 Cuttings
 Sample ID : A28B-P27-CUT1-092612 10-18 IN
 Collected By : Matt Kasten
 Collection Date : 09/26/12 09:15

ESC Sample # : L597799-01
 Site ID : A28B-P27
 Project # : A28B-P27

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Benzo(g,h,i)perylene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Benzo(k)fluoranthene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Chrysene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Dibenz(a,h)anthracene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Fluoranthene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Fluorene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Indeno(1,2,3-cd)pyrene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Naphthalene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Phenanthrene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Pyrene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
1-Methylnaphthalene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
2-Methylnaphthalene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
2-Chloronaphthalene	BDL	0.30	mg/kg	8270C-SIM	10/01/12	50
Surrogate Recovery						
Nitrobenzene-d5	55.0		% Rec.	8270C-SIM	10/01/12	50
2-Fluorobiphenyl	53.4		% Rec.	8270C-SIM	10/01/12	50
p-Terphenyl-d14	54.8		% Rec.	8270C-SIM	10/01/12	50

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: 10/08/12 13:27 Revised: 10/10/12 08:01

L597799-01 (SV8270PAHSIM) - Dilution due to matrix

L597799-01 (PH) - 8.2@21.4c

L597799-01 (DRO) - low surrogate confirmed with previous extraction



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 EnCana Oil & Gas Inc. - CO
 2717 County Road 215, Suite 100
 Parachute, CO 81635

October 10, 2012

Date Received : September 27, 2012
 Description : A28B-P27 Cuttings
 Sample ID : A28B-P27-CUT2-092612 10-18 IN
 Collected By : Matt Kasten
 Collection Date : 09/26/12 09:25

ESC Sample # : L597799-02
 Site ID : A28B-P27
 Project # : A28B-P27

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.2		su	9045D	10/03/12	1
Sodium Adsorption Ratio	16.			Calc.	09/29/12	1
Specific Conductance	1600		umhos/cm	9050AMod	10/04/12	1
Arsenic	2.0	1.0	mg/kg	6010B	10/02/12	1
Benzene	0.0030	0.0025	mg/kg	8021/8015	10/01/12	5
Toluene	BDL	0.025	mg/kg	8021/8015	10/01/12	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	10/01/12	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	10/01/12	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	10/01/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.7		% Rec.	8021/8015	10/01/12	5
a,a,a-Trifluorotoluene(PID)	104.		% Rec.	8021/8015	10/01/12	5
TPH (GC/FID) High Fraction	140	20.	mg/kg	3546/DRO	10/01/12	5
Surrogate recovery(%)						
o-Terphenyl	73.2		% Rec.	3546/DRO	10/01/12	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Acenaphthene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Acenaphthylene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Benzo(a)anthracene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Benzo(a)pyrene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Benzo(b)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Benzo(g,h,i)perylene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Benzo(k)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Chrysene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Dibenz(a,h)anthracene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Fluoranthene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Fluorene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Indeno(1,2,3-cd)pyrene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Naphthalene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Phenanthrene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Pyrene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
1-Methylnaphthalene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
2-Methylnaphthalene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
2-Chloronaphthalene	BDL	0.12	mg/kg	8270C-SIM	10/01/12	20
Surrogate Recovery						
Nitrobenzene-d5	71.5		% Rec.	8270C-SIM	10/01/12	20
2-Fluorobiphenyl	62.1		% Rec.	8270C-SIM	10/01/12	20

BDL - Below Detection Limit
 Det. Limit - Practical Quantitation Limit(PQL)
 L597799-02 (SV8270PAHSIM) - Dilution due to matrix
 L597799-02 (PH) - 8.2@21.5c



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 Parachute, CO 81635

October 10, 2012

Date Received : September 27, 2012
 Description : A28B-P27 Cuttings
 Sample ID : A28B-P27-CUT2-092612 10-18 IN
 Collected By : Matt Kasten
 Collection Date : 09/26/12 09:25

ESC Sample # : L597799-02
 Site ID : A28B-P27
 Project # : A28B-P27

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
p-Terphenyl-d14	57.9		% Rec.	8270C-SIM	10/01/12	20

BDL - Below Detection Limit
 Det. Limit - Practical Quantitation Limit(PQL)
 Note:
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Reported: 10/08/12 13:27 Revised: 10/10/12 08:01
 L597799-02 (SV8270PAHSIM) - Dilution due to matrix
 L597799-02 (PH) - 8.2@21.5c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier	
L597799-01	WG615392	SAMP	Anthracene	R2371694	0	
	WG615392	SAMP	Acenaphthene	R2371694	0	
	WG615392	SAMP	Acenaphthylene	R2371694	0	
	WG615392	SAMP	Benzo(a)anthracene	R2371694	0	
	WG615392	SAMP	Benzo(a)pyrene	R2371694	0	
	WG615392	SAMP	Benzo(b)fluoranthene	R2371694	0	
	WG615392	SAMP	Benzo(g,h,i)perylene	R2371694	0	
	WG615392	SAMP	Benzo(k)fluoranthene	R2371694	0	
	WG615392	SAMP	Chrysene	R2371694	0	
	WG615392	SAMP	Dibenz(a,h)anthracene	R2371694	0	
	WG615392	SAMP	Fluoranthene	R2371694	0	
	WG615392	SAMP	Fluorene	R2371694	0	
	WG615392	SAMP	Indeno(1,2,3-cd)pyrene	R2371694	0	
	WG615392	SAMP	Naphthalene	R2371694	0	
	WG615392	SAMP	Phenanthrene	R2371694	0	
	WG615392	SAMP	Pyrene	R2371694	0	
	WG615392	SAMP	1-Methylnaphthalene	R2371694	0	
	WG615392	SAMP	2-Methylnaphthalene	R2371694	0	
	WG615392	SAMP	2-Chloronaphthalene	R2371694	0	
	WG615392	SAMP	Nitrobenzene-d5	R2371694	J7	
	WG615392	SAMP	2-Fluorobiphenyl	R2371694	J7	
	WG615392	SAMP	p-Terphenyl-d14	R2371694	J7	
	WG615712	SAMP	pH	R2374536	T8	
	WG616497	SAMP	o-Terphenyl	R2379339	J2	
	L597799-02	WG615392	SAMP	Anthracene	R2371694	0
		WG615392	SAMP	Acenaphthene	R2371694	0
		WG615392	SAMP	Acenaphthylene	R2371694	0
		WG615392	SAMP	Benzo(a)anthracene	R2371694	0
		WG615392	SAMP	Benzo(a)pyrene	R2371694	0
		WG615392	SAMP	Benzo(b)fluoranthene	R2371694	0
		WG615392	SAMP	Benzo(g,h,i)perylene	R2371694	0
		WG615392	SAMP	Benzo(k)fluoranthene	R2371694	0
WG615392		SAMP	Chrysene	R2371694	0	
WG615392		SAMP	Dibenz(a,h)anthracene	R2371694	0	
WG615392		SAMP	Fluoranthene	R2371694	0	
WG615392		SAMP	Fluorene	R2371694	0	
WG615392		SAMP	Indeno(1,2,3-cd)pyrene	R2371694	0	
WG615392		SAMP	Naphthalene	R2371694	0	
WG615392		SAMP	Phenanthrene	R2371694	0	
WG615392		SAMP	Pyrene	R2371694	0	
WG615392		SAMP	1-Methylnaphthalene	R2371694	0	
WG615392		SAMP	2-Methylnaphthalene	R2371694	0	
WG615392		SAMP	2-Chloronaphthalene	R2371694	0	
WG615392		SAMP	Nitrobenzene-d5	R2371694	J7	
WG615392		SAMP	2-Fluorobiphenyl	R2371694	J7	
WG615392		SAMP	p-Terphenyl-d14	R2371694	J7	
WG615712		SAMP	pH	R2374536	T8	

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Mercury	< .02	mg/kg			WG615250	09/29/12 19:49
1-Methylnaphthalene	< .006	mg/kg			WG615392	10/01/12 03:31
2-Chloronaphthalene	< .006	mg/kg			WG615392	10/01/12 03:31
2-Methylnaphthalene	< .006	mg/kg			WG615392	10/01/12 03:31
Acenaphthene	< .006	mg/kg			WG615392	10/01/12 03:31
Acenaphthylene	< .006	mg/kg			WG615392	10/01/12 03:31
Anthracene	< .006	mg/kg			WG615392	10/01/12 03:31
Benzo(a)anthracene	< .006	mg/kg			WG615392	10/01/12 03:31
Benzo(a)pyrene	< .006	mg/kg			WG615392	10/01/12 03:31
Benzo(b)fluoranthene	< .006	mg/kg			WG615392	10/01/12 03:31
Benzo(g,h,i)perylene	< .006	mg/kg			WG615392	10/01/12 03:31
Benzo(k)fluoranthene	< .006	mg/kg			WG615392	10/01/12 03:31
Chrysene	< .006	mg/kg			WG615392	10/01/12 03:31
Dibenz(a,h)anthracene	< .006	mg/kg			WG615392	10/01/12 03:31
Fluoranthene	< .006	mg/kg			WG615392	10/01/12 03:31
Fluorene	< .006	mg/kg			WG615392	10/01/12 03:31
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG615392	10/01/12 03:31
Naphthalene	< .006	mg/kg			WG615392	10/01/12 03:31
Phenanthrene	< .006	mg/kg			WG615392	10/01/12 03:31
Pyrene	< .006	mg/kg			WG615392	10/01/12 03:31
2-Fluorobiphenyl		% Rec.	82.48	34-129	WG615392	10/01/12 03:31
Nitrobenzene-d5		% Rec.	71.45	14-141	WG615392	10/01/12 03:31
p-Terphenyl-d14		% Rec.	88.36	25-139	WG615392	10/01/12 03:31
TPH (GC/FID) High Fraction	< 4	ppm			WG615467	10/01/12 19:05
o-Terphenyl		% Rec.	62.28	50-150	WG615467	10/01/12 19:05
Benzene	< .0005	mg/kg			WG615118	10/01/12 13:16
Ethylbenzene	< .0005	mg/kg			WG615118	10/01/12 13:16
Toluene	< .005	mg/kg			WG615118	10/01/12 13:16
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG615118	10/01/12 13:16
Total Xylene	< .0015	mg/kg			WG615118	10/01/12 13:16
a,a,a-Trifluorotoluene(FID)		% Rec.	96.13	59-128	WG615118	10/01/12 13:16
a,a,a-Trifluorotoluene(PID)		% Rec.	103.9	54-144	WG615118	10/01/12 13:16
Arsenic	< 1	mg/kg			WG615533	10/02/12 14:27
Barium	< .25	mg/kg			WG615533	10/02/12 14:27
Cadmium	< .25	mg/kg			WG615533	10/02/12 14:27
Chromium	< .5	mg/kg			WG615533	10/02/12 14:27
Copper	< 1	mg/kg			WG615533	10/02/12 14:27
Lead	< .25	mg/kg			WG615533	10/02/12 14:27
Nickel	< 1	mg/kg			WG615533	10/02/12 14:27
Selenium	< 1	mg/kg			WG615533	10/02/12 14:27
Silver	< .5	mg/kg			WG615533	10/02/12 14:27
Zinc	< 1.5	mg/kg			WG615533	10/02/12 14:27
Specific Conductance	1.14	umhos/cm			WG616082	10/04/12 11:30
Chromium,Hexavalent	< 2	mg/kg			WG615888	10/04/12 16:31
TPH (GC/FID) High Fraction	< 4	ppm			WG616497	10/08/12 09:56

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
o-Terphenyl		% Rec.	57.85		50-150		10/08/12 09:56

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Mercury	mg/kg	0	0	0	20	L597738-01	WG615250
Arsenic	mg/kg	2.30	2.00	13.1	20	L597799-02	WG615533
Barium	mg/kg	3600	4740	27.1*	20	L597799-02	WG615533
Cadmium	mg/kg	0.310	0.0608	134.*	20	L597799-02	WG615533
Chromium	mg/kg	15.0	13.3	12.0	20	L597799-02	WG615533
Copper	mg/kg	17.0	16.0	6.06	20	L597799-02	WG615533
Lead	mg/kg	7.80	7.31	6.49	20	L597799-02	WG615533
Nickel	mg/kg	12.0	11.4	8.40	20	L597799-02	WG615533
Selenium	mg/kg	1.80	1.37	28.2*	20	L597799-02	WG615533
Silver	mg/kg	0	0	0	20	L597799-02	WG615533
Zinc	mg/kg	43.0	39.9	7.48	20	L597799-02	WG615533
pH	su	7.90	7.90	0.127	1	L597785-01	WG615712
pH	su	8.10	8.10	0	1	L598343-03	WG615712
ORP	mV	160.	160.	1.26	20	L597626-01	WG616089
ORP	mV	250.	240.	3.28	20	L598408-08	WG616089
Specific Conductance	umhos/cm	490.	480.	1.65	20	L597626-01	WG616082
Specific Conductance	umhos/cm	1900	1900	0.528	20	L598408-08	WG616082
Chromium,Hexavalent	mg/kg	0	0	0	20	L598343-03	WG615888
Chromium,Hexavalent	mg/kg	0	0	0	20	L598408-08	WG615888

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	12.4	14.2	115.	71.6-128	WG615250
1-Methylnaphthalene	mg/kg	.033	0.0235	71.2	48-113	WG615392
2-Chloronaphthalene	mg/kg	.033	0.0223	67.5	51-114	WG615392
2-Methylnaphthalene	mg/kg	.033	0.0229	69.4	44-109	WG615392
Acenaphthene	mg/kg	.033	0.0231	70.1	52-108	WG615392
Acenaphthylene	mg/kg	.033	0.0241	73.2	51-110	WG615392
Anthracene	mg/kg	.033	0.0270	81.9	58-120	WG615392
Benzo(a)anthracene	mg/kg	.033	0.0269	81.5	54-110	WG615392
Benzo(a)pyrene	mg/kg	.033	0.0281	85.3	56-118	WG615392
Benzo(b)fluoranthene	mg/kg	.033	0.0273	82.8	55-114	WG615392
Benzo(g,h,i)perylene	mg/kg	.033	0.0244	74.0	48-130	WG615392
Benzo(k)fluoranthene	mg/kg	.033	0.0265	80.3	55-122	WG615392
Chrysene	mg/kg	.033	0.0272	82.4	57-118	WG615392
Dibenz(a,h)anthracene	mg/kg	.033	0.0300	91.0	53-122	WG615392
Fluoranthene	mg/kg	.033	0.0255	77.3	58-118	WG615392
Fluorene	mg/kg	.033	0.0250	75.8	54-109	WG615392
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0302	91.6	51-125	WG615392
Naphthalene	mg/kg	.033	0.0217	65.6	45-105	WG615392
Phenanthrene	mg/kg	.033	0.0270	81.9	53-114	WG615392

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Pyrene	mg/kg	.033	0.0315	95.3	53-121	WG615392
2-Fluorobiphenyl				73.67	34-129	WG615392
Nitrobenzene-d5				65.42	14-141	WG615392
p-Terphenyl-d14				87.56	25-139	WG615392
TPH (GC/FID) High Fraction	ppm	60	37.8	62.9	50-150	WG615467
o-Terphenyl				63.30	50-150	WG615467
Benzene	mg/kg	.05	0.0523	105.	76-113	WG615118
Ethylbenzene	mg/kg	.05	0.0502	100.	78-115	WG615118
Toluene	mg/kg	.05	0.0504	101.	76-114	WG615118
Total Xylene	mg/kg	.15	0.145	96.7	81-118	WG615118
a,a,a-Trifluorotoluene(PID)				103.4	54-144	WG615118
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.98	109.	67-135	WG615118
a,a,a-Trifluorotoluene(FID)				103.0	59-128	WG615118
Arsenic	mg/kg	237	219.	92.4	83.1-117	WG615533
Barium	mg/kg	252	249.	98.8	84.1-116	WG615533
Cadmium	mg/kg	191	187.	97.9	83.2-117	WG615533
Chromium	mg/kg	128	130.	102.	81.3-118	WG615533
Copper	mg/kg	123	123.	100.	83.7-116	WG615533
Lead	mg/kg	103	96.5	93.7	83.1-117	WG615533
Nickel	mg/kg	118	113.	95.8	82-118	WG615533
Selenium	mg/kg	110	112.	102.	78.7-122	WG615533
Silver	mg/kg	47.3	44.4	93.9	66.2-134	WG615533
Zinc	mg/kg	183	182.	99.5	82-118	WG615533
pH	su	6.03	6.08	101.	98-101	WG615712
ORP	mV	228	230.	101.	95.6-104.	WG616089
Specific Conductance	umhos/cm	1050	1040	99.0	85-115	WG616082
Chromium,Hexavalent	mg/kg	150	137.	91.3	80-120	WG615888
TPH (GC/FID) High Fraction	ppm	60	45.1	75.1	50-150	WG616497
o-Terphenyl				66.06	50-150	WG616497

Analyte	Units	Laboratory Control Sample Duplicate		%Rec	Limit	RPD	Limit	Batch
		Result	Ref					
1-Methylnaphthalene	mg/kg	0.0250	0.0235	76.0	48-113	6.06	24	WG615392
2-Chloronaphthalene	mg/kg	0.0254	0.0223	77.0	51-114	13.0	24	WG615392
2-Methylnaphthalene	mg/kg	0.0250	0.0229	76.0	44-109	8.66	24	WG615392
Acenaphthene	mg/kg	0.0251	0.0231	76.0	52-108	8.05	22	WG615392
Acenaphthylene	mg/kg	0.0256	0.0241	78.0	51-110	5.86	21	WG615392
Anthracene	mg/kg	0.0285	0.0270	86.0	58-120	5.51	20	WG615392
Benzo(a)anthracene	mg/kg	0.0263	0.0269	80.0	54-110	2.22	22	WG615392
Benzo(a)pyrene	mg/kg	0.0285	0.0281	86.0	56-118	1.22	21	WG615392
Benzo(b)fluoranthene	mg/kg	0.0266	0.0273	81.0	55-114	2.69	20	WG615392
Benzo(g,h,i)perylene	mg/kg	0.0233	0.0244	70.0	48-130	4.92	20	WG615392

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzo(k)fluoranthene	mg/kg	0.0283	0.0265	86.0	55-122	6.45	25	WG615392
Chrysene	mg/kg	0.0280	0.0272	85.0	57-118	3.03	20	WG615392
Dibenz(a,h)anthracene	mg/kg	0.0306	0.0300	92.0	53-122	1.70	20	WG615392
Fluoranthene	mg/kg	0.0260	0.0255	79.0	58-118	1.95	20	WG615392
Fluorene	mg/kg	0.0256	0.0250	78.0	54-109	2.22	20	WG615392
Indeno(1,2,3-cd)pyrene	mg/kg	0.0308	0.0302	93.0	51-125	1.72	21	WG615392
Naphthalene	mg/kg	0.0237	0.0217	72.0	45-105	8.84	24	WG615392
Phenanthrene	mg/kg	0.0263	0.0270	80.0	53-114	2.82	20	WG615392
Pyrene	mg/kg	0.0322	0.0315	98.0	53-121	2.26	20	WG615392
2-Fluorobiphenyl				78.38	34-129			WG615392
Nitrobenzene-d5				73.05	14-141			WG615392
p-Terphenyl-d14				91.22	25-139			WG615392
TPH (GC/FID) High Fraction	ppm	41.0	37.8	68.0	50-150	8.35	25	WG615467
o-Terphenyl				66.30	50-150			WG615467
Benzene	mg/kg	0.0524	0.0523	105.	76-113	0.320	20	WG615118
Ethylbenzene	mg/kg	0.0503	0.0502	101.	78-115	0.260	20	WG615118
Toluene	mg/kg	0.0502	0.0504	100.	76-114	0.410	20	WG615118
Total Xylene	mg/kg	0.145	0.145	97.0	81-118	0.0700	20	WG615118
a,a,a-Trifluorotoluene(PID)				104.1	54-144			WG615118
TPH (GC/FID) Low Fraction	mg/kg	6.02	5.98	109.	67-135	0.620	20	WG615118
a,a,a-Trifluorotoluene(FID)				102.9	59-128			WG615118
pH	su	6.10	6.08	101.	98-101	0.328	20	WG615712
ORP	mV	230.	230.	101.	95.6-104.	0	20	WG616089
Specific Conductance	umhos/	1050	1040	100.	85-115	0.957	20	WG616082
Chromium,Hexavalent	mg/kg	146.	137.	97.0	80-120	6.36	20	WG615888
TPH (GC/FID) High Fraction	ppm	48.0	45.1	80.0	50-150	6.32	25	WG616497
o-Terphenyl				67.10	50-150			WG616497

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Mercury	mg/kg	0.251	0	.25	100.	80-120	L597738-01	WG615250
1-Methylnaphthalene	mg/kg	0.0261	0.000602	.033	77.4	25-155	L597984-02	WG615392
2-Chloronaphthalene	mg/kg	0.0274	0.00129	.033	79.2	31-153	L597984-02	WG615392
2-Methylnaphthalene	mg/kg	0.0268	0	.033	81.2	22-172	L597984-02	WG615392
Acenaphthene	mg/kg	0.0632	0.100	.033	0*	43-133	L597984-02	WG615392
Acenaphthylene	mg/kg	0.0317	0.00700	.033	74.7	42-146	L597984-02	WG615392
Anthracene	mg/kg	0.0306	0	.033	92.8	38-153	L597984-02	WG615392
Benzo(a)anthracene	mg/kg	0.0266	0	.033	80.7	31-142	L597984-02	WG615392
Benzo(a)pyrene	mg/kg	0.0271	0	.033	82.1	26-152	L597984-02	WG615392
Benzo(b)fluoranthene	mg/kg	0.0268	0	.033	81.2	10-188	L597984-02	WG615392
Benzo(g,h,i)perylene	mg/kg	0.0151	0	.033	45.8	10-176	L597984-02	WG615392
Benzo(k)fluoranthene	mg/kg	0.0260	0	.033	78.6	22-163	L597984-02	WG615392

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Chrysene	mg/kg	0.0276	0	.033	83.6	26-146	L597984-02	WG615392
Dibenz(a,h)anthracene	mg/kg	0.0233	0	.033	70.6	10-160	L597984-02	WG615392
Fluoranthene	mg/kg	0.0271	0	.033	82.0	23-160	L597984-02	WG615392
Fluorene	mg/kg	0.0377	0.0140	.033	71.9	44-143	L597984-02	WG615392
Indeno(1,2,3-cd)pyrene	mg/kg	0.0236	0	.033	71.4	10-157	L597984-02	WG615392
Naphthalene	mg/kg	0.0259	0	.033	78.6	22-156	L597984-02	WG615392
Phenanthrene	mg/kg	0.0294	0	.033	89.2	23-164	L597984-02	WG615392
Pyrene	mg/kg	0.0375	0.0140	.033	71.1	12-170	L597984-02	WG615392
2-Fluorobiphenyl					87.41	34-129		WG615392
Nitrobenzene-d5					78.39	14-141		WG615392
p-Terphenyl-d14					90.45	25-139		WG615392
TPH (GC/FID) High Fraction	ppm	143.	140.	60	5.14*	50-150	L598083-01	WG615467
o-Terphenyl					55.18	50-150		WG615467
Benzene	mg/kg	0.244	0	.05	97.6	32-137	L597806-01	WG615118
Ethylbenzene	mg/kg	0.237	0	.05	94.8	10-150	L597806-01	WG615118
Toluene	mg/kg	0.238	0	.05	95.2	20-142	L597806-01	WG615118
Total Xylene	mg/kg	0.684	0	.15	91.2	16-141	L597806-01	WG615118
a,a,a-Trifluorotoluene(PID)					102.7	54-144		WG615118
TPH (GC/FID) Low Fraction	mg/kg	27.3	0	5.5	99.3	55-109	L597806-01	WG615118
a,a,a-Trifluorotoluene(FID)					102.0	59-128		WG615118
Arsenic	mg/kg	43.5	2.00	50	83.0	75-125	L597799-02	WG615533
Barium	mg/kg	3780	4740	50	0*	75-125	L597799-02	WG615533
Cadmium	mg/kg	41.1	0.0608	50	82.1	75-125	L597799-02	WG615533
Chromium	mg/kg	58.1	13.3	50	89.6	75-125	L597799-02	WG615533
Copper	mg/kg	59.4	16.0	50	86.8	75-125	L597799-02	WG615533
Lead	mg/kg	46.5	7.31	50	78.4	75-125	L597799-02	WG615533
Nickel	mg/kg	51.5	11.4	50	80.2	75-125	L597799-02	WG615533
Selenium	mg/kg	43.0	1.37	50	83.3	75-125	L597799-02	WG615533
Silver	mg/kg	41.9	0	50	83.8	75-125	L597799-02	WG615533
Zinc	mg/kg	85.4	39.9	50	91.0	75-125	L597799-02	WG615533
Chromium, Hexavalent	mg/kg	0.480	0	20	2.40*	75-125	L597626-06	WG615888
TPH (GC/FID) High Fraction	ppm	47.4	0	60	79.0	50-150	L599137-03	WG616497
o-Terphenyl					65.74	50-150		WG616497

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Mercury	mg/kg	0.257	0.251	103.	80-120	2.36	20	L597738-01	WG615250
1-Methylnaphthalene	mg/kg	0.0227	0.0261	66.8	25-155	14.2	27	L597984-02	WG615392
2-Chloronaphthalene	mg/kg	0.0231	0.0274	66.0	31-153	17.2	22	L597984-02	WG615392
2-Methylnaphthalene	mg/kg	0.0223	0.0268	67.7	22-172	18.2	29	L597984-02	WG615392
Acenaphthene	mg/kg	0.0362	0.0632	0*	43-133	54.3*	26	L597984-02	WG615392
Acenaphthylene	mg/kg	0.0254	0.0317	55.7	42-146	22.0	22	L597984-02	WG615392
Anthracene	mg/kg	0.0279	0.0306	84.5	38-153	9.29	27	L597984-02	WG615392
Benzo(a)anthracene	mg/kg	0.0255	0.0266	77.4	31-142	4.10	31	L597984-02	WG615392
Benzo(a)pyrene	mg/kg	0.0265	0.0271	80.4	26-152	2.04	32	L597984-02	WG615392
Benzo(b)fluoranthene	mg/kg	0.0254	0.0268	77.0	10-188	5.24	33	L597984-02	WG615392

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
Benzo(g,h,i)perylene	mg/kg	0.0153	0.0151	46.3	10-176	1.21	30	L597984-02	WG615392	
Benzo(k)fluoranthene	mg/kg	0.0257	0.0260	78.0	22-163	0.801	29	L597984-02	WG615392	
Chrysene	mg/kg	0.0263	0.0276	79.8	26-146	4.74	30	L597984-02	WG615392	
Dibenz(a,h)anthracene	mg/kg	0.0232	0.0233	70.3	10-160	0.423	39	L597984-02	WG615392	
Fluoranthene	mg/kg	0.0254	0.0271	76.9	23-160	6.48	22	L597984-02	WG615392	
Fluorene	mg/kg	0.0298	0.0377	47.8	44-143	23.6*	23	L597984-02	WG615392	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0237	0.0236	71.9	10-157	0.628	40	L597984-02	WG615392	
Naphthalene	mg/kg	0.0209	0.0259	63.4	22-156	21.4	27	L597984-02	WG615392	
Phenanthrene	mg/kg	0.0269	0.0294	81.6	23-164	8.93	25	L597984-02	WG615392	
Pyrene	mg/kg	0.0331	0.0375	57.9	12-170	12.4	24	L597984-02	WG615392	
2-Fluorobiphenyl				74.25	34-129				WG615392	
Nitrobenzene-d5				64.14	14-141				WG615392	
p-Terphenyl-d14				89.09	25-139				WG615392	
TPH (GC/FID) High Fraction	ppm	165.	143.	42.2*	50-150	14.4	25	L598083-01	WG615467	
o-Terphenyl				65.09	50-150				WG615467	
Benzene	mg/kg	0.238	0.244	95.4	32-137	2.34	39	L597806-01	WG615118	
Ethylbenzene	mg/kg	0.229	0.237	91.4	10-150	3.59	44	L597806-01	WG615118	
Toluene	mg/kg	0.229	0.238	91.6	20-142	3.80	42	L597806-01	WG615118	
Total Xylene	mg/kg	0.655	0.684	87.3	16-141	4.31	46	L597806-01	WG615118	
a,a,a-Trifluorotoluene(PID)				102.5	54-144				WG615118	
TPH (GC/FID) Low Fraction	mg/kg	27.1	27.3	98.4	55-109	0.830	20	L597806-01	WG615118	
a,a,a-Trifluorotoluene(FID)				101.8	59-128				WG615118	
Arsenic	mg/kg	48.4	43.5	92.8	75-125	10.7	20	L597799-02	WG615533	
Barium	mg/kg	5820	3780	2160*	75-125	42.5*	20	L597799-02	WG615533	
Cadmium	mg/kg	43.7	41.1	87.3	75-125	6.13	20	L597799-02	WG615533	
Chromium	mg/kg	62.0	58.1	97.4	75-125	6.49	20	L597799-02	WG615533	
Copper	mg/kg	61.7	59.4	91.4	75-125	3.80	20	L597799-02	WG615533	
Lead	mg/kg	51.2	46.5	87.8	75-125	9.62	20	L597799-02	WG615533	
Nickel	mg/kg	56.6	51.5	90.4	75-125	9.44	20	L597799-02	WG615533	
Selenium	mg/kg	45.9	43.0	89.1	75-125	6.52	20	L597799-02	WG615533	
Silver	mg/kg	45.8	41.9	91.6	75-125	8.89	20	L597799-02	WG615533	
Zinc	mg/kg	90.9	85.4	102.	75-125	6.24	20	L597799-02	WG615533	
Chromium,Hexavalent	mg/kg	0.520	0.480	2.60*	75-125	8.00	20	L597626-06	WG615888	
TPH (GC/FID) High Fraction	ppm	51.9	47.4	86.5	50-150	9.00	25	L599137-03	WG616497	
o-Terphenyl				71.74	50-150				WG616497	

Batch number /Run number / Sample number cross reference

WG615250: R2370694: L597799-01
 WG615132: R2370893: L597799-01 02
 WG615392: R2371694: L597799-01 02
 WG615467: R2372102: L597799-02
 WG615118: R2372255: L597799-01 02
 WG615533: R2373753: L597799-01 02
 WG615712: R2374536: L597799-01 02
 WG616089: R2375993: L597799-01
 WG616082: R2376155: L597799-01 02
 WG615888: R2376553: L597799-01

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WG616497: R2379339: L597799-01

Quality Assurance Report
Level II

L597799

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

October 10, 2012

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

EnCana Oil & Gas Inc. - CO
Chris Hines / Matt Kasten
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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.