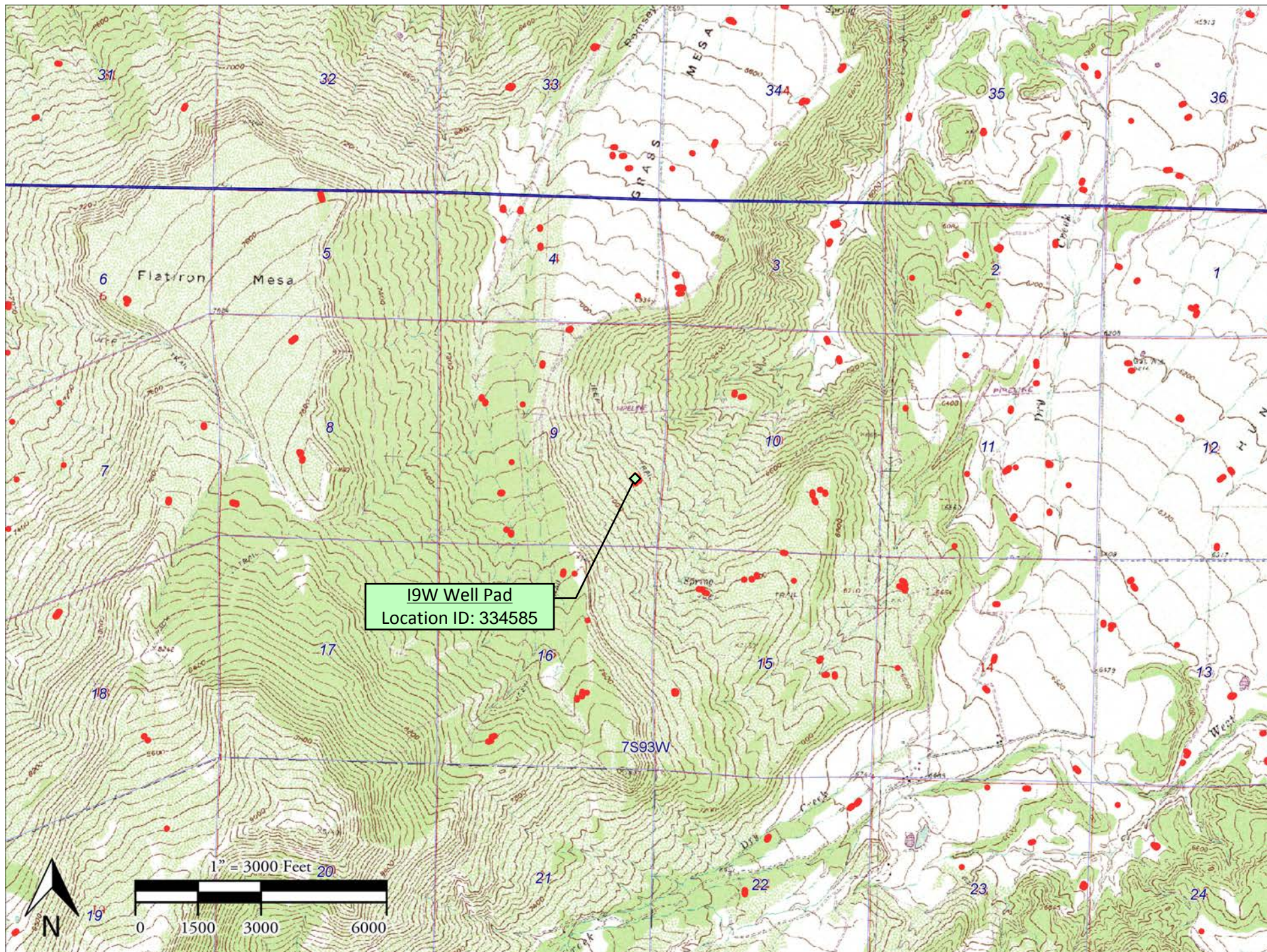


I9W Well Pad Location Map





Laboratory Results Summary Table

05/20/2015

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

Organic Compounds in Soil (mg/kg [ppm])																				Inorganics in Soil			Metals in Soil (mg/kg [ppm])													
500		TPH (total volatile and extractable petroleum hydrocarbons)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000		(<12)	(6-9)	0.39	15000	70	120000	23	3100	400	23	1600	390	390	23000
					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
80	36.5				43.5	0.0128	0.0128	ND	0.0086	0.005	ND	0.0018	ND	ND	ND	0.0075	ND	0.0148	0.0428	ND	0.038	ND	1.18	16.3	8.45	5.6	11100	0.18	22.3	0.12	17.1	12	0.02	16.1	0.19	0.06



05/07/10

Technical Report for

ENCANA

I9W Cuttings Sample

Accutest Job Number: T51471

Sampling Date: 04/23/10

Report to:

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

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 K Canevaro

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

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: T51471

I9W Cuttings Sample

Sample Number	Collected			Received	Matrix		Client Sample ID
	Date	Time	By		Code	Type	
T51471-1	04/23/10	09:40	AS	04/24/10	SO	Soil	I9W-CUTTINGS-042310
T51471-1A	04/23/10	09:40	AS	04/24/10	SO	Soil	I9W-CUTTINGS-042310

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

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: ENCANA

Job No T51471

Site: I9W Cuttings Sample

Report Date 5/7/2010 4:49:31 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 04/23/2010 and were received at Accutest on 04/24/2010 properly preserved, at 2.8 Deg. C and intact. These Samples received an Accutest job number of T51471. 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: VZ2846
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T51417-5MS, T51417-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Toluene are outside control limits. Probable cause due to matrix interference.
- RPD(s) for MSD for Ethylbenzene, Toluene, Xylene (total) are outside control limits for sample T51417-5MSD. Probable cause due to sample homogeneity.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP14675
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T51007-1RMS, T51007-1RMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 1-Methylnaphthalene, Naphthalene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 1-Methylnaphthalene, Naphthalene are outside control limits. Probable cause due to matrix interference.
- T51471-1: 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: GEE2757
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T51284-4MS, T51284-4MSD were used as the QC samples indicated.

Extractables by GC By Method SW846 8015 M

Matrix SO

Batch ID: OP14682

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T51667-1MS, T51667-1MSD were used as the QC samples indicated.
- 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.

Metals By Method SW846 6010B

Matrix AQ

Batch ID: MP11685

- 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) T51667-4ADUP, T51667-4ASDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Calcium, Magnesium are outside control limits for sample MP11685-SD1. Probable cause due to sample homogeneity.
- MP11685-SD1 for Magnesium: Serial dilution indicates possible matrix interference.
- MP11685-SD1 for Calcium: Serial dilution indicates possible matrix interference.

Matrix SO

Batch ID: MP11683

- 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) T51358-1DUP, T51358-1MS, T51358-1MSD, T51358-1SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Nickel, Zinc are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Recovery(s) for Barium 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 Serial Dilution for Lead, Selenium, Arsenic, Barium, Zinc are outside control limits for sample MP11683-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP11683-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP11683-SD1 for Arsenic: Serial dilution indicates possible matrix interference.
- MP11683-SD1 for Barium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 7471A

Matrix SO

Batch ID: MP11675

- 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) T51300-1MS, T51300-1MSD, T51300-1DUP were used as the QC samples for metals.
- RPD(s) for Duplicate for Mercury are outside control limits for sample MP11675-D1. High RPD due to possible sample nonhomogeneity.

Wet Chemistry By Method EPA 120.1

Matrix AQ	Batch ID: GN22474
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T51284-1DUP were used as the QC samples for Specific Conductivity.

Wet Chemistry By Method LADNR29B

Matrix SO	Batch ID: MP11685
------------------	--------------------------

- T51471-1A 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: GN22480
------------------	--------------------------

- Sample(s) T51318-2DUP were used as the QC samples for Solids, Percent.

Wet Chemistry By Method SW846 3060/7196A

Matrix SO	Batch ID: GN22456
------------------	--------------------------

- All method blanks for this batch meet method specific criteria.
- Sample(s) T51284-1DUP, T51284-1MS were used as the QC samples for Chromium, Hexavalent.

Wet Chemistry By Method SW846 6010/7196A M

Matrix SO	Batch ID: R23009
------------------	-------------------------

- T51471-1 for Chromium, Trivalent: Calculated as: $(\text{Chromium}) - (\text{Chromium, Hexavalent})$

Wet Chemistry By Method SW846 9045C

Matrix SO	Batch ID: GN22387
------------------	--------------------------

- Sample(s) T51471-1DUP 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

Client Sample ID:	I9W-CUTTINGS-042310			Date Sampled:	04/23/10
Lab Sample ID:	T51471-1			Date Received:	04/24/10
Matrix:	SO - Soil			Percent Solids:	76.3
Method:	SW846 8260B				
Project:	I9W Cuttings Sample				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z008302.D	1	04/28/10	JL	n/a	n/a	VZ2846
Run #2							

	Initial Weight	Final Volume
Run #1	5.17 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0128	0.0051	0.00089	mg/kg	
108-88-3	Toluene	0.0128	0.0051	0.0012	mg/kg	
100-41-4	Ethylbenzene	ND	0.0051	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0086	0.015	0.0026	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		70-121%
2037-26-5	Toluene-D8	120%		76-132%
460-00-4	4-Bromofluorobenzene	124%		73-165%
17060-07-0	1,2-Dichloroethane-D4	91%		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: I9W-CUTTINGS-042310

Lab Sample ID: T51471-1

Date Sampled: 04/23/10

Matrix: SO - Soil

Date Received: 04/24/10

Method: SW846 8270C BY SIM SW846 3550B

Percent Solids: 76.3

Project: I9W Cuttings Sample

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	H38285.D	1	04/30/10	SC	04/28/10	OP14675	EH2046
Run #2	H38270.D	20	04/29/10	SC	04/28/10	OP14675	EH2045

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

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.0052	0.0087	0.0015	mg/kg	J
208-96-8	Acenaphthylene	ND	0.0087	0.0030	mg/kg	
120-12-7	Anthracene	ND	0.0087	0.0017	mg/kg	
56-55-3	Benzo(a)anthracene	0.0018	0.0087	0.0014	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.0087	0.0047	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0087	0.0046	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.0087	0.0087	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0087	0.0057	mg/kg	
218-01-9	Chrysene	0.0075	0.0087	0.0021	mg/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.0087	0.0084	mg/kg	
206-44-0	Fluoranthene	0.0148	0.0087	0.0019	mg/kg	
86-73-7	Fluorene	0.0428	0.0087	0.0031	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0087	0.0065	mg/kg	
90-12-0	1-Methylnaphthalene	0.0236	0.0087	0.0016	mg/kg	
91-57-6	2-Methylnaphthalene	0.0508	0.0087	0.0015	mg/kg	
91-20-3	Naphthalene	0.0381	0.0087	0.0013	mg/kg	
85-01-8	Phenanthrene	0.0541	0.0087	0.0012	mg/kg	
129-00-0	Pyrene	ND	0.0087	0.0030	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	31%	49%	10-127%
321-60-8	2-Fluorobiphenyl	16%	29%	11-133%
1718-51-0	Terphenyl-d14	40%	26%	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

Client Sample ID:	I9W-CUTTINGS-042310			Date Sampled:	04/23/10					
Lab Sample ID:	T51471-1			Date Received:	04/24/10					
Matrix:	SO - Soil			Percent Solids:	76.3					
Method:	SW846 8015									
Project:	I9W Cuttings Sample									

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE054287.D	2	04/29/10	FI	n/a	n/a	GEE2757
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.18 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	36.5	16	0.95	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		46-127%
98-08-8	aaa-Trifluorotoluene	92%		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

Client Sample ID:	I9W-CUTTINGS-042310			Date Sampled:	04/23/10
Lab Sample ID:	T51471-1			Date Received:	04/24/10
Matrix:	SO - Soil			Percent Solids:	76.3
Method:	SW846 8015 M SW846 3550B				
Project:	I9W Cuttings Sample				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CC219432.D	1	05/02/10	FO	04/30/10	OP14682	GCC1094
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	43.5	4.3	3.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	38%		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

Client Sample ID: I9W-CUTTINGS-042310

Lab Sample ID: T51471-1

Date Sampled: 04/23/10

Matrix: SO - Soil

Date Received: 04/24/10

Percent Solids: 76.3

Project: I9W Cuttings Sample

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.6	0.75	0.15	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Barium	11100	150	0.45	mg/kg	10	05/04/10	05/07/10 NS	SW846 6010B ³	SW846 3050B ⁵
Cadmium	0.18 B	0.38	0.075	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Chromium	22.4	0.75	0.053	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Copper	17.1	1.9	0.098	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Lead	12.0	0.75	0.30	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Mercury	0.020 B	0.021	0.00083	mg/kg	1	05/03/10	05/03/10 TW	SW846 7471A ¹	SW846 7471A ⁴
Nickel	16.1	3.0	0.098	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Selenium	0.19 B	0.75	0.18	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Silver	0.060 U	0.75	0.060	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵
Zinc	57.6	1.5	0.30	mg/kg	1	05/04/10	05/05/10 NS	SW846 6010B ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA4706

(2) Instrument QC Batch: MA4712

(3) Instrument QC Batch: MA4718

(4) Prep QC Batch: MP11675

(5) Prep QC Batch: MP11683

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:	I9W-CUTTINGS-042310	Date Sampled:	04/23/10
Lab Sample ID:	T51471-1	Date Received:	04/24/10
Matrix:	SO - Soil	Percent Solids:	76.3
Project:	I9W Cuttings Sample		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.12 B	2.6	mg/kg	1	05/01/10 10:00	KD	SW846 3060/7196A
Chromium, Trivalent ^a	22.3	3.4	mg/kg	1	05/05/10 02:05	NS	SW846 6010/7196A M
Solids, Percent	76.3		%	1	04/30/10	RR	SM 2540 G
Specific Conductivity	1180	1.0	umhos/cm	1	04/30/10 12:00	SS	EPA 120.1
pH	8.45		su	1	04/26/10 17:30	CN	SW846 9045C

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	I9W-CUTTINGS-042310			Date Sampled:	04/23/10
Lab Sample ID:	T51471-1A			Date Received:	04/24/10
Matrix:	SO - Soil			Percent Solids:	76.3
Project:	I9W Cuttings Sample				

SAR Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By		Method	Prep Method
Calcium	98.7	25	0.18	mg/l	5	05/04/10	05/06/10	NS	SW846 6010B ¹	LADNR 29B ²
Magnesium	18.4 B	25	0.039	mg/l	5	05/04/10	05/06/10	NS	SW846 6010B ¹	LADNR 29B ²
Sodium	673	25	0.67	mg/l	5	05/04/10	05/06/10	NS	SW846 6010B ¹	LADNR 29B ²

(1) Instrument QC Batch: MA4718

(2) Prep QC Batch: MP11685

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:	I9W-CUTTINGS-042310	Date Sampled:	04/23/10
Lab Sample ID:	T51471-1A	Date Received:	04/24/10
Matrix:	SO - Soil	Percent Solids:	76.3
Project:	I9W Cuttings Sample		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	16.3		ratio	1	05/06/10 19:06	NS	LADNR29B

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

RL = Reporting Limit



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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

CONTAMINANT OF CONCERN	CONCENTRATIONS	ANALYTICAL METHOD (SW846)
<i>Organic Compounds in Soil</i>		
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg	5015
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
Benzo(A)pyrene	0.022 mg/kg ²	8270C
Chrysene	22 mg/kg ²	8270C
Dibenzo(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 mhos/cm or 2x background ¹	9050
Sodium Adsorption Ratio (SAR)	<12 ²	DA628/28B
pH	6-9	9045C
<i>Metals in Soils</i>		
Arsenic	0.39 mg/kg ³	6010B
Barium	15,000 mg/kg ²	6010B
Cadmium	70 mg/kg ^{3a}	6010B
Chromium (III)	120,000 mg/kg ²	6010B
Chromium (VI)	23 mg/kg ^{3a}	6010B
Copper	3,100 mg/kg ²	6010B
Lead (inorganic)	400 mg/kg ²	6010B
Mercury	23 mg/kg ²	6010B
Nickel (soluble salts)	1,500 mg/kg ^{2a}	6010B
Selenium	350 mg/kg ^{2a}	6010B
Silver	350 mg/kg ²	6010B
Zinc	23,000 mg/kg ^{2a}	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 SW846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.		

1 Consideration shall be given to background levels in native soils and ground water.
2 Concentrations taken from CDPHE-HMWD Table 1 Colorado Soil Evaluation Values (December 2007).
3 Concentrations taken from CDPHE-WQCC Regulation 41. The Basic Standards for Ground Water.
4 For this table, the first 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 WQCC intends that control requirements for this chemical in public water supplies, taking treatability and laboratory detection limits into account. The number in the range except as follows: 1) where ground water quality exceeds the first number in the range due to a release of contaminants that is not a direct discharge of the chemical into the ground water; 2) subsequent migration of such contaminants clean-up levels for the entire contaminant plume shall be no more restrictive than the second number 1) the second number in the range 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.
6 Analysis by USDA, Agricultural Handbook 60 method (208) with soluble cations determined by method (2). Method (208) = estimation of exchangeable sodium percentage and exchangeable potassium percentage from soluble cations. Method (2) = saturated paste method (note: each analysis requires a unique sample of at least 500 grams). If soils are saturated, USDA Agricultural Handbook 60 with soluble cations determined by method (208) shall be used for analysis.
7 The table values for these inorganic constituents is taken from the CDPHE-HMWD 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.

4.1

Airbill Numbers: _____

TRIP BLANK INFORMATION

<input type="checkbox"/>	Trip Blank on COC but not received
<input type="checkbox"/>	Trip Blank received but not on COC
<input type="checkbox"/>	Trip Blank not intact
<input type="checkbox"/>	Received Water Trip Blank
<input type="checkbox"/>	Received Soil TB

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

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

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: [Signature] 4/24/16

INFORMATION AND SAMPLE LABELING VERIFIED BY:

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: _____

By Accutest Representative: _____ Via: Phone _____ Email _____

Client Instructions:

<http://www.oxfordjournals.org/doi/10.1093/oxfordjournals/oxfam.a011001>

Page 3 of 4

SAMPLE RECEIPT LOG

JOB #: 751471 DATE/TIME RECEIVED: 4/24/10 1000

CLIENT: Enlana 01/1/95 INITIALS: FF

[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

T51471: Chain of Custody

Page 4 of 4



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

Page 1 of 1

Job Number: T51471

Account: ENCACOP ENCANA

Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2846-MB	Z008293.D	1	04/28/10	JL	n/a	n/a	VZ2846

The QC reported here applies to the following samples:

Method: SW846 8260B

T51471-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	4.0	0.70	ug/kg	
100-41-4	Ethylbenzene	ND	4.0	0.90	ug/kg	
108-88-3	Toluene	ND	4.0	0.95	ug/kg	
1330-20-7	Xylene (total)	ND	12	2.1	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	107% 70-121%
2037-26-5	Toluene-D8	117% 76-132%
460-00-4	4-Bromofluorobenzene	97% 73-165%
17060-07-0	1,2-Dichloroethane-D4	94% 57-122%

Blank Spike Summary

Page 1 of 1

Job Number: T51471

Account: ENCACOP ENCANA

Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2846-BS	Z008291.D	1	04/28/10	JL	n/a	n/a	VZ2846

The QC reported here applies to the following samples:

Method: SW846 8260B

T51471-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	55.5	111	70-114
100-41-4	Ethylbenzene	50	54.5	109	60-119
108-88-3	Toluene	50	53.6	107	68-115
1330-20-7	Xylene (total)	150	168	112	61-115

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	70-121%
2037-26-5	Toluene-D8	114%	76-132%
460-00-4	4-Bromofluorobenzene	94%	73-165%
17060-07-0	1,2-Dichloroethane-D4	92%	57-122%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T51417-5MS	Z008299.D	1	04/28/10	JL	n/a	n/a	VZ2846
T51417-5MSD	Z008300.D	1	04/28/10	JL	n/a	n/a	VZ2846
T51417-5	Z008298.D	1	04/28/10	JL	n/a	n/a	VZ2846

The QC reported here applies to the following samples:

Method: SW846 8260B

T51471-1

CAS No.	Compound	T51417-5 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.8 U		56.9	64.2	113	48.1	88	29	70-114/38
100-41-4	Ethylbenzene	4.8 U		56.9	60.9	107	38.8	71	44*	60-119/40
108-88-3	Toluene	4.8 U		56.9	66.4	117*	41.4	76	46*	68-115/38
1330-20-7	Xylene (total)	14 U		171	181	106	117	72	43*	61-115/39

CAS No.	Surrogate Recoveries	MS	MSD	T51417-5	Limits
1868-53-7	Dibromofluoromethane	106%	105%	110%	70-121%
2037-26-5	Toluene-D8	124%	110%	114%	76-132%
460-00-4	4-Bromofluorobenzene	129%	98%	106%	73-165%
17060-07-0	1,2-Dichloroethane-D4	89%	94%	99%	57-122%



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: T51471

Account: ENCACOP ENCANA

Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14675-MB	H38266.D	1	04/29/10	SC	04/28/10	OP14675	EH2045

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T51471-1

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	26% 10-127%
321-60-8	2-Fluorobiphenyl	33% 11-133%
1718-51-0	Terphenyl-d14	55% 15-187%

Blank Spike Summary

Page 1 of 1

Job Number: T51471

Account: ENCACOP ENCANA

Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14675-BS	H38265.D	1	04/29/10	SC	04/28/10	OP14675	EH2045

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T51471-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	167	182	109	18-118
208-96-8	Acenaphthylene	167	124	74	35-125
120-12-7	Anthracene	167	169	101	24-116
56-55-3	Benzo(a)anthracene	167	142	85	32-132
50-32-8	Benzo(a)pyrene	167	164	98	36-130
205-99-2	Benzo(b)fluoranthene	167	120	72	35-134
191-24-2	Benzo(g,h,i)perylene	167	144	86	18-149
207-08-9	Benzo(k)fluoranthene	167	171	103	30-131
218-01-9	Chrysene	167	179	107	37-124
53-70-3	Dibenzo(a,h)anthracene	167	140	84	23-150
206-44-0	Fluoranthene	167	172	103	28-118
86-73-7	Fluorene	167	171	103	32-106
193-39-5	Indeno(1,2,3-cd)pyrene	167	149	89	18-150
90-12-0	1-Methylnaphthalene	167	181	109	10-128
91-57-6	2-Methylnaphthalene	167	98.6	59	28-113
91-20-3	Naphthalene	167	115	69	31-106
85-01-8	Phenanthrene	167	187	112	37-112
129-00-0	Pyrene	167	135	81	24-132

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	37%	10-127%
321-60-8	2-Fluorobiphenyl	75%	11-133%
1718-51-0	Terphenyl-d14	59%	15-187%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14675-MS	H38286.D	1	04/30/10	SC	04/29/10	OP14675	EH2046
OP14675-MSD	H38287.D	1	04/30/10	SC	04/29/10	OP14675	EH2046
T51007-1R	H38271.D	1	04/29/10	SC	04/28/10	OP14675	EH2045

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T51471-1

CAS No.	Compound	T51007-1R ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	10.1		192	117	56	80.8	36	37	10-153/80
208-96-8	Acenaphthylene	7.7 U		192	137	71	145	75	6	10-144/71
120-12-7	Anthracene	3.2	J	192	122	62	128	64	5	10-176/57
56-55-3	Benzo(a)anthracene	7.7 U		192	119	62	113	58	5	10-174/73
50-32-8	Benzo(a)pyrene	7.7 U		192	193	100	164	84	16	10-182/74
205-99-2	Benzo(b)fluoranthene	7.7 U		192	140	73	146	75	4	10-188/86
191-24-2	Benzo(g,h,i)perylene	7.7 U		192	113	59	116	60	3	10-150/62
207-08-9	Benzo(k)fluoranthene	7.7 U		192	138	72	144	74	4	10-170/94
218-01-9	Chrysene	7.7 U		192	133	69	134	69	1	10-165/73
53-70-3	Dibenzo(a,h)anthracene	7.7 U		192	132	69	133	68	1	10-192/74
206-44-0	Fluoranthene	2.5	J	192	183	94	200	102	9	10-141/73
86-73-7	Fluorene	7.7 U		192	187	97	215	111	14	10-164/72
193-39-5	Indeno(1,2,3-cd)pyrene	7.7 U		192	128	67	132	68	3	10-150/73
90-12-0	1-Methylnaphthalene	358		192	238	-62*	287	-37*	19	10-154/82
91-57-6	2-Methylnaphthalene	166		192	223	30	240	38	7	10-171/75
91-20-3	Naphthalene	237		192	198	-20*	160	-40*	21	10-138/82
85-01-8	Phenanthrene	27.5		192	141	59	140	58	1	10-191/77
129-00-0	Pyrene	3.0	J	192	142	72	129	65	10	10-150/66

CAS No.	Surrogate Recoveries	MS	MSD	T51007-1R	Limits
4165-60-0	Nitrobenzene-d5	30%	29%	53%	10-127%
321-60-8	2-Fluorobiphenyl	31%	21%	63%	11-133%
1718-51-0	Terphenyl-d14	34%	31%	49%	15-187%



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: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEE2757-MB	EE054275.D	1	04/29/10	FI	n/a	n/a	GEE2757

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

T51471-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.10	0.0060	mg/kg	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	4-Bromofluorobenzene	98%	46-127%
98-08-8	aaa-Trifluorotoluene	96%	44-120%

Blank Spike Summary

Job Number: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEE2757-BS	EE054271.D	1	04/29/10	FI	n/a	n/a	GEE2757

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

T51471-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	0.4	0.411	103	78-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	97%	46-127%
98-08-8	aaa-Trifluorotoluene	105%	44-120%

7.2.1
7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T51284-4MS	EE054283.D	1	04/29/10	FI	n/a	n/a	GEE2757
T51284-4MSD	EE054284.D	1	04/29/10	FI	n/a	n/a	GEE2757
T51284-4	EE054281.D	1	04/29/10	FI	n/a	n/a	GEE2757

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

T51471-1

CAS No.	Compound	T51284-4 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		25.2	23.1	92	24.5	97	6	78-115/14

CAS No.	Surrogate Recoveries	MS	MSD	T51284-4	Limits
460-00-4	4-Bromofluorobenzene	87%	92%	87%	46-127%
98-08-8	aaa-Trifluorotoluene	101%	101%	95%	44-120%



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: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14682-MB	CC219420.D	1	05/01/10	FO	04/30/10	OP14682	GCC1094

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

T51471-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	3.3	2.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	72% 33-115%

Blank Spike Summary

Job Number: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14682-BS	CC219421.D	1	05/01/10	FO	04/30/10	OP14682	GCC1094

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

T51471-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH (C10-C28)	32.7	30.7	94	45-107

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	107%	33-115%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T51471
Account: ENCACOP ENCANA
Project: I9W Cuttings Sample

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP14682-MS	CC219462.D	1	05/02/10	FO	04/30/10	OP14682	GCC1094
OP14682-MSD	CC219463.D	1	05/02/10	FO	04/30/10	OP14682	GCC1094
T51667-1	CC219459.D	10	05/02/10	FO	04/30/10	OP14682	GCC1094

The QC reported here applies to the following samples:

Method: SW846 8015 M

T51471-1

CAS No.	Compound	T51667-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C10-C28)	1700		37.7	1590	-292* a	1750	132* a	10	45-107/34

CAS No.	Surrogate Recoveries	MS	MSD	T51667-1	Limits
84-15-1	o-Terphenyl	81%	76%	0%* b	33-115%

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



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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11675
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 05/03/10

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.017	.0041	.00066	-0.0052	<0.017

Associated samples MP11675: T51471-1

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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11675
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 05/03/10 05/03/10

Metal	T51300-1		QC	T51300-1		Spikelot		QC	
	Original	DUP	RPD	Limits	Original	MS	HGTXWS1	% Rec	Limits
Mercury	0.19	0.28	38.3*(a)	0-20	0.19	0.59	0.392	102.1	75-125

Associated samples MP11675: T51471-1

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 sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T51471
 Account: ENCACOP - ENCANA
 Project: I9W Cuttings Sample

QC Batch ID: MP11675
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 05/03/10

Metal	T51300-1 Original	MSD	Spikelot HGTXWS1	% Rec	MSD RPD	QC Limit
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Mercury	0.19	0.61	0.394	106.6	3.3	
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Associated samples MP11675: T51471-1

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: T51471
 Account: ENCACOP - ENCANA
 Project: I9W Cuttings Sample

QC Batch ID: MP11675
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 05/03/10

Metal	LCS Result	Spikelot HGLCD054 % Rec	QC Limits
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Mercury	7.0	7.34	95.4	72-128
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Associated samples MP11675: T51471-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11683
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 05/04/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.82	2.2		
Antimony	0.50	.11	.14		
Arsenic	0.50	.089	.1	0.014	<0.50
Barium	10	.007	.03	-0.0035	<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	-0.33	<0.50
Cobalt	2.5	.025	.09		
Copper	1.3	.029	.065	-0.018	<1.3
Iron	5.0	.65	1.1		
Lead	0.50	.079	.2	0.033	<0.50
Magnesium	250	.34	.58		
Manganese	0.75	.01	.035		
Molybdenum	0.50	.048	.075		
Nickel	2.0	.048	.065	-0.33	<2.0
Potassium	250	2.7	16		
Selenium	0.50	.16	.12	0.022	<0.50
Silver	0.50	.043	.04	-0.0050	<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	-0.13	<1.0

Associated samples MP11683: T51471-1

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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11683
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 05/04/10

05/04/10

Metal	T51358-1 Original	DUP	RPD	QC Limits	T51358-1 Original	MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic	8.5	7.9	7.3	0-20	8.5	30.7	26.2	84.8	80-120
Barium	1280	1130	12.4	0-20	1280	1230	26.2	-191.1(a)	80-120
Beryllium									
Boron									
Cadmium	0.29	0.27	7.1	0-20	0.29	21.7	26.2	81.8	80-120
Calcium									
Chromium	16.1	15.4	4.4	0-20	16.1	38.4	26.2	85.2	80-120
Cobalt									
Copper	12.9	12.8	0.8	0-20	12.9	37.4	26.2	93.6	80-120
Iron									
Lead	11.5	10.6	8.1	0-20	11.5	32.8	26.2	81.4	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	13.0	13.1	0.8	0-20	13.0	34.5	26.2	82.2	80-120
Potassium									
Selenium	0.47	0.51	8.2	0-20	0.47	22.2	26.2	83.0	80-120
Silver	0.0	0.0	NC	0-20	0.0	22.2	26.2	84.8	80-120
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	49.8	45.4	9.2	0-20	49.8	70.8	26.2	80.3	80-120

Associated samples MP11683: T51471-1

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) 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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11683
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 05/04/10

Metal	T51358-1 Original	MSD	Spikelot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	8.5	27.1	22.7	82.0	12.5	20
Barium	1280	1190	22.7	-396.8(a)	3.3	20
Beryllium						
Boron						
Cadmium	0.29	18.6	22.7	80.7	15.4	20
Calcium						
Chromium	16.1	35.1	22.7	83.8	9.0	20
Cobalt						
Copper	12.9	34.0	22.7	93.0	9.5	20
Iron						
Lead	11.5	29.7	22.7	80.2	9.9	20
Magnesium						
Manganese						
Molybdenum						
Nickel	13.0	31.0	22.7	79.4N	10.7	20
Potassium						
Selenium	0.47	19.2	22.7	82.6	14.5	20
Silver	0.0	19.3	22.7	85.1	14.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	49.8	66.0	22.7	71.4N	7.0	20

Associated samples MP11683: T51471-1

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) 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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11683
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 05/04/10

Metal	LCS Result	Spikelot MPLCD054	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	143	158	90.5	82-118
Barium	351	348	100.9	81-119
Beryllium				
Boron				
Cadmium	170	187	90.9	82-118
Calcium				
Chromium	88.9	89.5	99.3	79-121
Cobalt				
Copper	131	129	101.6	84-117
Iron				
Lead	156	172	90.7	79-120
Magnesium				
Manganese				
Molybdenum				
Nickel	91.6	99	92.5	81-119
Potassium				
Selenium	139	148	93.9	78-121
Silver	62.7	66	95.0	66-134
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	363	394	92.1	80-119

Associated samples MP11683: T51471-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11683
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 05/04/10

Metal	T51358-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	141	161	14.1*(a)	0-10
Barium	21300	25500	19.7*(a)	0-10
Beryllium				
Boron				
Cadmium	4.81	4.69	2.5	0-10
Calcium				
Chromium	268	290	7.9	0-10
Cobalt				
Copper	215	233	8.6	0-10
Iron				
Lead	192	230	19.7*	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	217	233	7.2	0-10
Potassium				
Selenium	7.78	0.00	100.0(b)	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	830	977	17.7*(a)	0-10

Associated samples MP11683: T51471-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11685
Matrix Type: AQUEOUS

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

Prep Date: 05/04/10

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	779	<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	1030	<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	1940	<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 MP11685: T51471-1A

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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

QC Batch ID: MP11685
Matrix Type: AQUEOUS

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

Prep Date: 05/04/10

Metal	T51667-4A Original DUP		RPD	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	113000	112000	0.9	0-20
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium	57000	56700	0.5	0-20
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	2590000	2730000	5.3	0-20
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP11685: T51471-1A

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: T51471
 Account: ENCACOP - ENCANA
 Project: I9W Cuttings Sample

QC Batch ID: MP11685
 Matrix Type: AQUEOUS

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

Prep Date: 05/04/10

Metal	T51667-4A		%DIF	QC Limits
	Original	SDL 5:5		
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	113000	22100	80.3*(a)	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium	57000	11300	80.1*(a)	0-10
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	2590000	2740000	5.9	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP11685: T51471-1A

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



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: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN22456	2.0	<2.0	mg/kg	40	37.9	94.0	80-120%
Specific Conductivity	GN22474	1.0	<1.0	umhos/cm				

Associated Samples:
Batch GN22456: T51471-1
Batch GN22474: T51471-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN22456	T51284-1	mg/kg	0.80	<2.4	2.4	0-20%
Solids, Percent	GN22480	T51318-2	%	76.4	76.6	0.3	0-5%
Specific Conductivity	GN22474	T51284-1	umhos/cm	4150	4160	0.2	0-20%
pH	GN22387	T51471-1	su	8.45	8.49	0.5	0-20%

Associated Samples:

Batch GN22387: T51471-1

Batch GN22456: T51471-1

Batch GN22474: T51471-1

Batch GN22480: T51471-1

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T51471
Account: ENCACOP - ENCANA
Project: I9W Cuttings Sample

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN22456	T51284-1	mg/kg	0.80	40	46.4	113.0	75-125%

Associated Samples:

Batch GN22456: T51471-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits