

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax: (303)894-2109



## SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form). Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

RECEIVED  
2/6/2012

1. OGCC Operator Number: 100185		4. Contact Name	
2. Name of Operator: Encana Oil & Gas (USA) Inc.		Chris Hines	
3. Address: 2717 County Road 215		Phone: (970) 285-2653	
City: Parachute State: CO Zip: 81635		Fax: (970) 285-2705	
5. API Number: 05-NA		OGCC Facility ID Number: 421199	
6. Well/Facility Name: KIMBALL MTN		7. Well/Facility Number: B07799	
8. Location (Qtr/Otr, Sec, Twp, Rng, Meridian): NWN, Sec 7, T7S, R99W, 6th PM		Survey Plat	
9. County: Garfield		Directional Survey	
10. Field Name: Gasaway		Surface Eqmt Diagram	
11. Federal, Indian or State Lease Number: NA		Technical Info Page	
		Other	

Complete the Attachment  
Checklist

OP OGCC

## General Notice

<input type="checkbox"/> CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)	
Change of Surface Footage from Exterior Section Lines:	<input type="checkbox"/> FNU/FSL <input type="checkbox"/> FEL/FWL
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/> <input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/> <input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/> <input type="checkbox"/>
Bottomhole location Qtr/Otr, Sec, Twp, Rng, Mer	
Latitude	Distance to nearest property line
Longitude	Distance to nearest bldg, public rd, utility or RR
Ground Elevation	Distance to nearest lease line
	Is location in a High Density Area (rule 603b)? Yes/No
	Distance to nearest well same formation
	Surface owner consultation date:
GPS DATA:	
Date of Measurement	PDOP Reading
	Instrument Operator's Name
<input type="checkbox"/> CHANGE SPACING UNIT	
Formation	Formation Code
Spacing order number	Unit Acreage
	Unit configuration
<input type="checkbox"/> Remove from surface bond	
Signed surface use agreement attached	
<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling):	
Effective Date:	
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	
<input type="checkbox"/> CHANGE WELL NAME	
From:	NUMBER
To:	
Effective Date:	
<input type="checkbox"/> ABANDONED LOCATION:	
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date Ready for Inspection:	
<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS	
Date well shut in or temporarily abandoned:	
Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No	
MIT required if shut in longer than two years. Date of last MIT	
<input type="checkbox"/> SPUD DATE:	
<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)	
<input type="checkbox"/> SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK	
*submit cbl and cement job summaries	
Method used	Cementing tool setting/perf depth
Cement volume	Cement top
Cement bottom	Date
<input type="checkbox"/> RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.	
Final reclamation will commence on approximately	
<input type="checkbox"/> Final reclamation is completed and site is ready for inspection.	

## Technical Engineering/Environmental Notice

<input type="checkbox"/> Notice of Intent	<input checked="" type="checkbox"/> Report of Work Done
Approximate Start Date:	Date Work Completed: March, 2011
Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)	
<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other: pit closure
	<input type="checkbox"/> E&P Waste Disposal
	<input type="checkbox"/> Beneficial Reuse of E&P Waste
	<input type="checkbox"/> Status Update/Change of Remediation Plans for Spills and Releases

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: Christopher C. Hines  
Print Name: Christopher C. HinesDate: 02-06-12 Email: christopher.hines@encana.com  
Title: Environmental Field Coordinator

COGCC Approved:

Title: FOR

Date:

CONDITIONS OF APPROVAL, IF ANY:

Chris Canfield  
EPS NW Section

02/08/2012

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

1. OGCC Operator Number: \_\_\_\_\_ API Number: \_\_\_\_\_

2. Name of Operator: \_\_\_\_\_ OGCC Facility ID # \_\_\_\_\_

3. Well/Facility Name: \_\_\_\_\_ Well/Facility Number: \_\_\_\_\_

4. Location (QtrQtr, Sec, Twp, Rng, Meridian): \_\_\_\_\_

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5.

DESCRIBE PROPOSED OR COMPLETED OPERATIONS

Colorado Oil and Gas Conservation Commission  
Rifle Office  
707 Wapiti Court, Suite 204  
Rifle, CO 81650

Mr. Chris Canfield  
Northwest Region Environmental Protection Specialist  
[chris.canfield@state.co.us](mailto:chris.canfield@state.co.us)  
970.216.6832 x3

## **NOTIFICATION OF COMPLETION:**

### **B07 – Lined Earthen Pit Closure (Remediation #5589)**

Mr. Chris Canfield:

In accordance with COGCC Rule 909.e.(2) this letter was prepared as a Notification of Completion (NOC) for the Site Investigation, Remediation, and Closure of Encana's B07 lined earthen pit (Facility ID 421199) located in the Kimball Mountain area of operation.

As required by COGCC 900 Series Rules, a Form 27 was submitted in support of this pit closure. The COGCC assigned Remediation # 5589 to the project. Included in the Form 27 was a site specific topographic location map.

In March, 2011 the pit liner was removed, and in accordance with the approved Form 27, a composite sample of below-liner soils was collected to identify potential failure(s) of the pit liner. The collected below-liner sample did not indicate that a liner failure had occurred. This Notification of Completion is being submitted as attachment to a Form 4 (Sundry Notice) prepared to document concentrations for constituents of concern above Table 910-1 allowable levels, but below background. The pit was backfilled and closed in March, 2011.

Included in this NOC is a laboratory results summary table identifying below liner analytical concentrations, laboratory reports, and a site diagram identifying sampling locations in support of this effort.

If you have any questions regarding the documentation or procedures used in support of this effort, please don't hesitate to contact me. If you have no further questions, please close the COGCC assigned remediation number (5589) and update your records to indicate that the pit (421199) on this location has been closed.

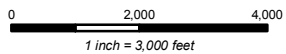
Regards,



Christopher C. Hines  
Natural Resources Specialist  
Environmental Field Coordinator  
970.285.2653  
[christopher.hines@encana.com](mailto:christopher.hines@encana.com)

Attachments:    Laboratory Results Summary Table  
                     Laboratory Reports  
                     Site Diagram

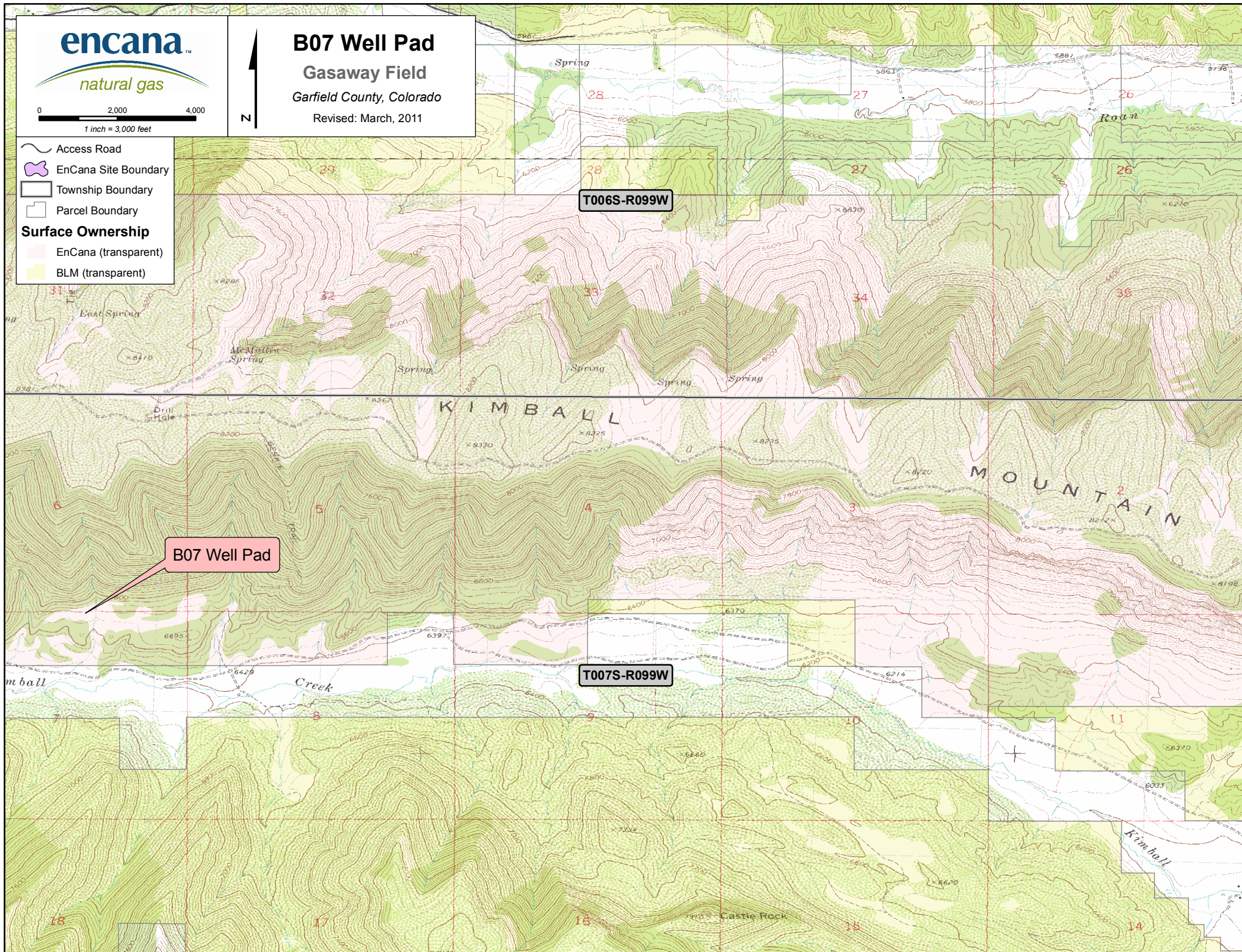




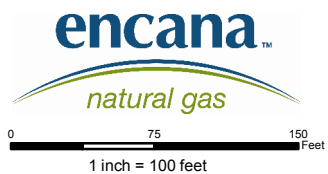
Revised: March, 2011



EnCana (transparent)

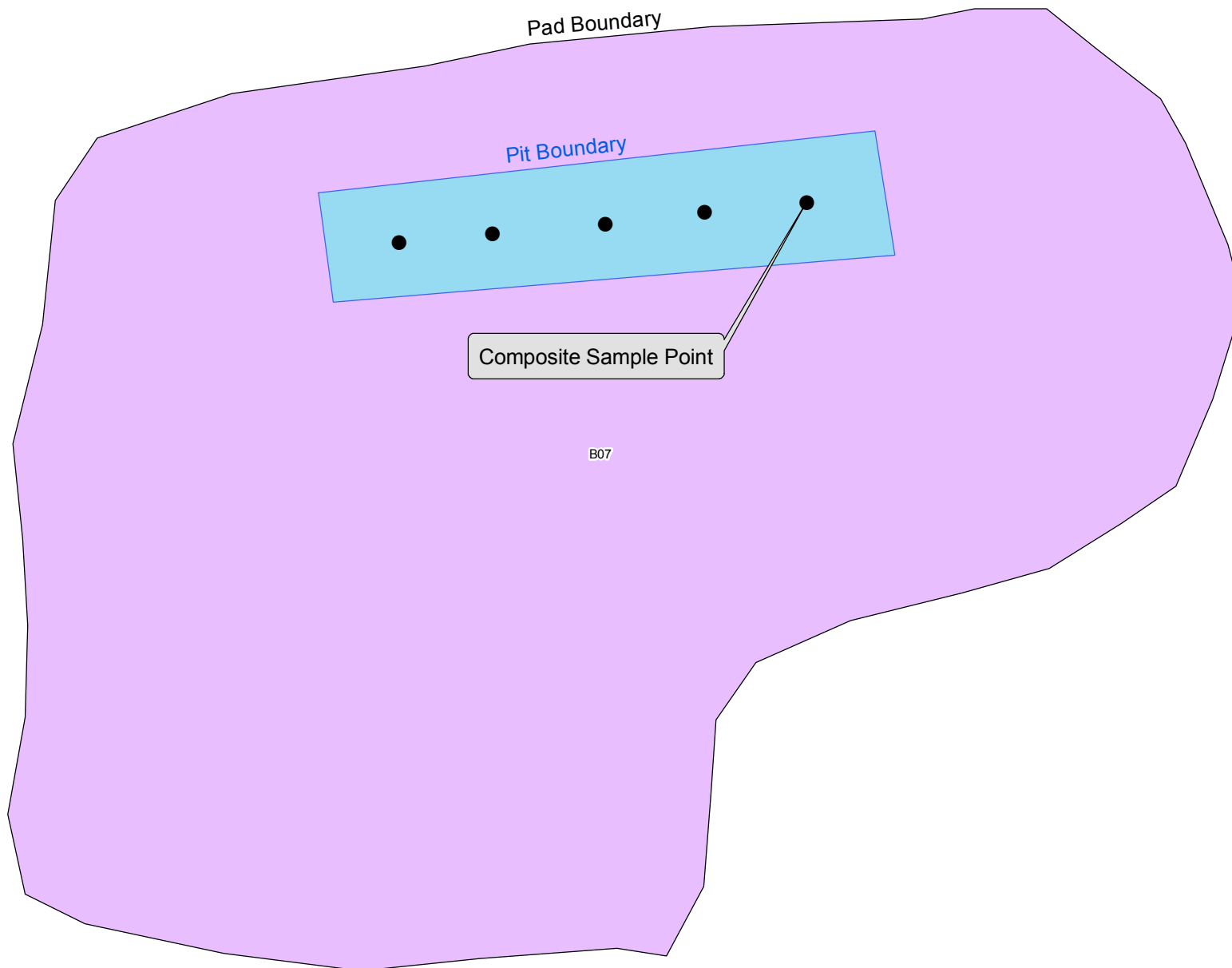






# B07 Pit Closure Sampling Diagram (421199)

Revised: January 4, 2012





Laboratory Results Summary Table

02/06/2012

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

Allowable Concentration -->				Organic Compounds in Soil (mg/kg [ppm])																		Inorganics in Soil			Metals in Soil (mg/kg [ppm])															
Location	Sample Date:	Sample Matrix	Matrix Notes	500	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	
B07	01/20/11	Background	pre liner install pit bottom	8.4	BDL	8.4	BDL	BDL	BDL	BDL	0.015	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.2	18	8.5	12	980	BDL	18	BDL	16	19	BDL	15	1.3	BDL	49
B07	03/09/11	Pit	post liner removal	8.69	ND	8.69	ND	ND	ND	ND	ND	0.015	ND	ND	ND	ND	ND	ND	ND	ND	0.0144	ND	0.094	ND	0.942	11.8	8.31	13.2	488	0.54	23.5	BDL	23.7	18.4	BDL	22.1	BDL	BDL	69.3	



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

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

## Report Summary

Friday January 28, 2011

Report Number: L498453

Samples Received: 01/21/11

Client Project:

Description: B07 Pit Bottom Sample

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

Entire Report Reviewed By:

Jayred 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,  
TX - T104704245, OK-9915

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

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

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

REPORT OF ANALYSIS

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

January 28, 2011

Date Received : January 21, 2011  
Description : B07 Pit Bottom Sample

Sample ID : B07 PITBOTTOM-012011

Collected By : Aaron Stacy  
Collection Date : 01/20/11 10:15

ESC Sample # : L498453-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	01/26/11	1
Chromium, Trivalent	18.	0.50	mg/kg	Calc.	01/28/11	1
ORP	93.		mV	2580	01/26/11	1
pH	8.5		su	9045D	01/25/11	1
Sodium Adsorption Ratio	18.			Calc.	01/26/11	1
Specific Conductance	1200		umhos/cm	9050AMod	01/26/11	1
Mercury	BDL	0.020	mg/kg	7471	01/23/11	1
Arsenic	12.	5.0	mg/kg	6010B	01/28/11	5
Barium	980	1.2	mg/kg	6010B	01/28/11	5
Cadmium	BDL	1.2	mg/kg	6010B	01/28/11	5
Chromium	18.	0.50	mg/kg	6010B	01/28/11	1
Copper	16.	1.0	mg/kg	6010B	01/28/11	1
Lead	19.	1.2	mg/kg	6010B	01/28/11	5
Nickel	15.	1.0	mg/kg	6010B	01/28/11	1
Selenium	1.3	1.0	mg/kg	6010B	01/28/11	1
Silver	BDL	0.50	mg/kg	6010B	01/28/11	1
Zinc	49.	1.5	mg/kg	6010B	01/28/11	1
Benzene	BDL	0.0025	mg/kg	8021/8015	01/22/11	5
Toluene	BDL	0.025	mg/kg	8021/8015	01/22/11	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	01/22/11	5
Total Xylene	0.015	0.0075	mg/kg	8021/8015	01/22/11	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	01/22/11	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.1		% Rec.	8021/8015	01/22/11	5
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021/8015	01/22/11	5
TPH (GC/FID) High Fraction	8.4	4.0	mg/kg	3546/DRO	01/25/11	1
Surrogate recovery(%)						
o-Terphenyl	63.0		% Rec.	3546/DRO	01/25/11	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
L498453-01 (PH) - 8.5@20.1c



REPORT OF ANALYSIS

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

January 28, 2011

Date Received : January 21, 2011  
Description : B07 Pit Bottom Sample

Sample ID : B07 PITBOTTOM-012011

Collected By : Aaron Stacy  
Collection Date : 01/20/11 10:15

ESC Sample # : L498453-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Naphthalene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
1-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
2-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	01/24/11	1
Surrogate Recovery						
Nitrobenzene-d5	87.5		% Rec.	8270C-SIM	01/24/11	1
2-Fluorobiphenyl	103.		% Rec.	8270C-SIM	01/24/11	1
p-Terphenyl-d14	104.		% Rec.	8270C-SIM	01/24/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 01/28/11 11:13 Printed: 01/28/11 11:13  
L498453-01 (PH) - 8.5@20.1c

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L498453-01	WG518356	SAMP	Cadmium	R1553729	0

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
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.

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.

Summary of Remarks For Samples Printed  
01/28/11 at 11:13:44

TSR Signing Reports: 358  
R5 - Desired TAT

Log all samples beginning with different sample numbers to separate reports. Ex.- M34 N PIT and M34 S PIT go on one L#, but M34 S PIT and E34 S PIT go on separate L #s. Log project # as project name.

Sample: L498453-01 Account: ENCANACO Received: 01/21/11 09:00 Due Date: 01/28/11 00:00 RPT Date: 01/28/11 11:13





YOUR LAB OF CHOICE

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

Parachute, CO 81635

Quality Assurance Report  
Level II

L498453

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

January 28, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Mercury	< .02	mg/kg			WG518291	01/23/11 09:25
1-Methylnaphthalene	< .006	mg/kg			WG518323	01/23/11 08:38
2-Chloronaphthalene	< .006	mg/kg			WG518323	01/23/11 08:38
2-Methylnaphthalene	< .006	mg/kg			WG518323	01/23/11 08:38
Acenaphthene	< .006	mg/kg			WG518323	01/23/11 08:38
Acenaphthylene	< .006	mg/kg			WG518323	01/23/11 08:38
Anthracene	< .006	mg/kg			WG518323	01/23/11 08:38
Benzo(a)anthracene	< .006	mg/kg			WG518323	01/23/11 08:38
Benzo(a)pyrene	< .006	mg/kg			WG518323	01/23/11 08:38
Benzo(b)fluoranthene	< .006	mg/kg			WG518323	01/23/11 08:38
Benzo(g,h,i)perylene	< .006	mg/kg			WG518323	01/23/11 08:38
Benzo(k)fluoranthene	< .006	mg/kg			WG518323	01/23/11 08:38
Chrysene	< .006	mg/kg			WG518323	01/23/11 08:38
Dibenz(a,h)anthracene	< .006	mg/kg			WG518323	01/23/11 08:38
Fluoranthene	< .006	mg/kg			WG518323	01/23/11 08:38
Fluorene	< .006	mg/kg			WG518323	01/23/11 08:38
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG518323	01/23/11 08:38
Naphthalene	< .006	mg/kg			WG518323	01/23/11 08:38
Phenanthrene	< .006	mg/kg			WG518323	01/23/11 08:38
Pyrene	< .006	mg/kg			WG518323	01/23/11 08:38
2-Fluorobiphenyl		% Rec.	76.38	21-120	WG518323	01/23/11 08:38
Nitrobenzene-d5		% Rec.	68.87	33-114	WG518323	01/23/11 08:38
p-Terphenyl-d14		% Rec.	82.91	18-142	WG518323	01/23/11 08:38
TPH (GC/FID) High Fraction	< 4	ppm			WG518251	01/24/11 10:00
o-Terphenyl		% Rec.	90.99	50-150	WG518251	01/24/11 10:00
Benzene	< .0005	mg/kg			WG518290	01/22/11 01:21
Ethylbenzene	< .0005	mg/kg			WG518290	01/22/11 01:21
Toluene	< .005	mg/kg			WG518290	01/22/11 01:21
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG518290	01/22/11 01:21
Total Xylene	< .0015	mg/kg			WG518290	01/22/11 01:21
a,a,a-Trifluorotoluene(FID)		% Rec.	98.57	59-128	WG518290	01/22/11 01:21
a,a,a-Trifluorotoluene(PID)		% Rec.	101.8	54-144	WG518290	01/22/11 01:21
pH	5.10	su			WG518370	01/25/11 13:50
Chromium,Hexavalent	< 2	mg/kg			WG518115	01/26/11 14:17
Specific Conductance	1.10	umhos/cm			WG518734	01/26/11 18:05
Arsenic	< 1	mg/kg			WG518356	01/27/11 22:45
Barium	< .25	mg/kg			WG518356	01/27/11 22:45
Cadmium	< .25	mg/kg			WG518356	01/27/11 22:45
Chromium	< .5	mg/kg			WG518356	01/27/11 22:45
Copper	< 1	mg/kg			WG518356	01/27/11 22:45
Lead	< .25	mg/kg			WG518356	01/27/11 22:45
Nickel	< 1	mg/kg			WG518356	01/27/11 22:45
Selenium	< 1	mg/kg			WG518356	01/27/11 22:45
Silver	< .5	mg/kg			WG518356	01/27/11 22:45
Zinc	< 1.5	mg/kg			WG518356	01/27/11 22:45

\* 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 or Brad Kieding  
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report  
Level II

L498453

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

January 28, 2011

Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate					
Mercury	mg/kg	0.0670	0.0720		6.90	20	L498439-08	WG518291
pH	su	7.80	7.90		1.27*	1	L498223-01	WG518370
pH	su	7.80	7.80		0	1	L498576-15	WG518370
Chromium,Hexavalent	mg/kg	2.90	3.00		2.02	20	L497826-01	WG518115
Chromium,Hexavalent	mg/kg	5.10	4.60		9.92	20	L498130-04	WG518115
ORP	mV	96.0	92.0		4.26	20	L498747-05	WG518764
ORP	mV	86.0	86.0		0	20	L498747-14	WG518764
Specific Conductance	umhos/cm	1200	1200		3.60	20	L498453-01	WG518734
Arsenic	mg/kg	6.80	7.10		5.05	20	L498538-07	WG518356
Barium	mg/kg	120.	120.		3.28	20	L498538-07	WG518356
Cadmium	mg/kg	0	0		0	20	L498538-07	WG518356
Chromium	mg/kg	26.0	26.0		1.16	20	L498538-07	WG518356
Copper	mg/kg	28.0	28.1		1.41	20	L498538-07	WG518356
Lead	mg/kg	14.0	14.0		2.82	20	L498538-07	WG518356
Nickel	mg/kg	32.0	31.6		0.631	20	L498538-07	WG518356
Selenium	mg/kg	6.50	7.90		20.1*	20	L498538-07	WG518356
Silver	mg/kg	0	0		0	20	L498538-07	WG518356
Zinc	mg/kg	64.0	63.5		0.157	20	L498538-07	WG518356

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	8.77	10.7	122.	71.6-127.7	WG518291
1-Methylnaphthalene	mg/kg	.033	0.0296	89.7	41-110	WG518323
2-Chloronaphthalene	mg/kg	.033	0.0301	91.2	43-109	WG518323
2-Methylnaphthalene	mg/kg	.033	0.0285	86.4	38-104	WG518323
Acenaphthene	mg/kg	.033	0.0260	78.6	48-103	WG518323
Acenaphthylene	mg/kg	.033	0.0279	84.4	43-106	WG518323
Anthracene	mg/kg	.033	0.0308	93.3	51-110	WG518323
Benzo(a)anthracene	mg/kg	.033	0.0246	74.7	38-126	WG518323
Benzo(a)pyrene	mg/kg	.033	0.0255	77.4	47-118	WG518323
Benzo(b)fluoranthene	mg/kg	.033	0.0241	72.9	47-118	WG518323
Benzo(g,h,i)perylene	mg/kg	.033	0.0278	84.3	40-125	WG518323
Benzo(k)fluoranthene	mg/kg	.033	0.0289	87.6	45-121	WG518323
Chrysene	mg/kg	.033	0.0267	80.9	35-135	WG518323
Dibenz(a,h)anthracene	mg/kg	.033	0.0265	80.2	41-124	WG518323
Fluoranthene	mg/kg	.033	0.0266	80.5	50-114	WG518323
Fluorene	mg/kg	.033	0.0269	81.6	49-109	WG518323
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0266	80.5	40-126	WG518323
Naphthalene	mg/kg	.033	0.0264	80.1	36-100	WG518323
Phenanthrene	mg/kg	.033	0.0264	79.9	46-108	WG518323
Pyrene	mg/kg	.033	0.0247	74.7	30-136	WG518323
2-Fluorobiphenyl				78.97	33-114	WG518323
Nitrobenzene-d5				77.44	21-120	WG518323
p-Terphenyl-d14				89.09	18-142	WG518323

\* Performance of this Analyte is outside of established criteria.

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L498453

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
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1-800-767-5859  
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Analyte	Units	Laboratory Control		Sample	% Rec	Limit	Batch
		Known	Val	Result			
TPH (GC/FID) High Fraction	ppm	60		53.5	89.2	50-150	WG518251
o-Terphenyl					93.97	50-150	WG518251
Benzene	mg/kg	.05		0.0453	90.5	76-113	WG518290
Ethylbenzene	mg/kg	.05		0.0478	95.7	78-115	WG518290
Toluene	mg/kg	.05		0.0466	93.2	76-114	WG518290
Total Xylene	mg/kg	.15		0.145	96.6	81-118	WG518290
a,a,a-Trifluorotoluene(PID)					101.8	54-144	WG518290
TPH (GC/FID) Low Fraction	mg/kg	5.5		5.72	104.	67-135	WG518290
a,a,a-Trifluorotoluene(FID)					106.0	59-128	WG518290
pH	su	6.92		6.90	99.7	97.98-102.02	WG518370
Chromium, Hexavalent	mg/kg	100		112.	112.	50-143	WG518115
ORP	mV	229		220.	96.1	95.6-104.37	WG518764
Specific Conductance	umhos/cm	561		570.	102.	85-115	WG518734
Arsenic	mg/kg	192		183.	95.3	78.6-120.8	WG518356
Barium	mg/kg	420		410.	97.6	78.8-121.4	WG518356
Cadmium	mg/kg	70.1		65.0	92.7	78.5-121.5	WG518356
Chromium	mg/kg	168		166.	98.8	80.4-120.2	WG518356
Copper	mg/kg	122		121.	99.2	81.6-119.7	WG518356
Lead	mg/kg	113		107.	94.7	77.3-122.1	WG518356
Nickel	mg/kg	74.1		66.1	89.2	78.8-121.2	WG518356
Selenium	mg/kg	176		174.	98.9	75.6-125.0	WG518356
Silver	mg/kg	115		112.	97.4	66-133.9	WG518356
Zinc	mg/kg	437		429.	98.2	78.5-121.7	WG518356

Analyte	Units	Laboratory Control		Sample Duplicate	Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1-Methylnaphthalene	mg/kg	0.0299	0.0296	91.0	41-110	1.07	24	WG518323
2-Chloronaphthalene	mg/kg	0.0302	0.0301	92.0	43-109	0.374	21	WG518323
2-Methylnaphthalene	mg/kg	0.0279	0.0285	84.0	38-104	2.18	24	WG518323
Acenaphthene	mg/kg	0.0271	0.0260	82.0	48-103	4.16	20	WG518323
Acenaphthylene	mg/kg	0.0280	0.0279	85.0	43-106	0.330	20	WG518323
Anthracene	mg/kg	0.0307	0.0308	93.0	51-110	0.283	22	WG518323
Benzo(a)anthracene	mg/kg	0.0260	0.0246	79.0	38-126	5.21	20	WG518323
Benzo(a)pyrene	mg/kg	0.0255	0.0255	77.0	47-118	0.326	20	WG518323
Benzo(b)fluoranthene	mg/kg	0.0260	0.0241	79.0	47-118	7.74	29	WG518323
Benzo(g,h,i)perylene	mg/kg	0.0268	0.0278	81.0	40-125	3.78	20	WG518323
Benzo(k)fluoranthene	mg/kg	0.0252	0.0289	76.0	45-121	13.6	31	WG518323
Chrysene	mg/kg	0.0251	0.0267	76.0	35-135	6.31	20	WG518323
Dibenz(a,h)anthracene	mg/kg	0.0268	0.0265	81.0	41-124	1.32	20	WG518323
Fluoranthene	mg/kg	0.0277	0.0266	84.0	50-114	4.12	20	WG518323
Fluorene	mg/kg	0.0271	0.0269	82.0	49-109	0.857	19	WG518323
Indeno(1,2,3-cd)pyrene	mg/kg	0.0264	0.0266	80.0	40-126	0.802	20	WG518323
Naphthalene	mg/kg	0.0271	0.0264	82.0	36-100	2.44	24	WG518323
Phenanthrene	mg/kg	0.0268	0.0264	81.0	46-108	1.70	21	WG518323
Pyrene	mg/kg	0.0244	0.0247	74.0	30-136	0.875	20	WG518323
2-Fluorobiphenyl				78.56	33-114			WG518323

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrobenzene-d5				73.10	21-120			
p-Terphenyl-d14				90.15	18-142			
TPH (GC/FID) High Fraction	ppm	52.8	53.5	88.0	50-150	1.45	25	WG518251
o-Terphenyl				91.21	50-150			WG518251
Benzene	mg/kg	0.0442	0.0453	88.0	76-113	2.30	20	WG518290
Ethylbenzene	mg/kg	0.0466	0.0478	93.0	78-115	2.58	20	WG518290
Toluene	mg/kg	0.0451	0.0466	90.0	76-114	3.38	20	WG518290
Total Xylene	mg/kg	0.141	0.145	94.0	81-118	2.74	20	WG518290
a,a,a-Trifluorotoluene(PID)				101.1	54-144			WG518290
TPH (GC/FID) Low Fraction	mg/kg	5.78	5.72	105.	67-135	0.880	20	WG518290
a,a,a-Trifluorotoluene(FID)				106.2	59-128			WG518290
pH	su	6.90	6.90	100.	97.98-102.02	0	20	WG518370
Chromium,Hexavalent	mg/kg	119.	112.	119.	50-143	6.06	20	WG518115
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG518764
Specific Conductance	umhos/	570.	570.	102.	85-115	0	20	WG518734

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Mercury	mg/kg	0.310	0.0720	.25	95.2	70-130	L498439-08	WG518291
Benzene	mg/kg	0.0403	0	.05	80.6	32-137	L498482-02	WG518290
Ethylbenzene	mg/kg	0.0421	0	.05	84.3	10-150	L498482-02	WG518290
Toluene	mg/kg	0.0413	0	.05	82.6	20-142	L498482-02	WG518290
Total Xylene	mg/kg	0.127	0	.15	85.0	16-141	L498482-02	WG518290
a,a,a-Trifluorotoluene(PID)					100.4	54-144		WG518290
TPH (GC/FID) Low Fraction	mg/kg	4.77	0	5.5	86.8	55-109	L498482-02	WG518290
a,a,a-Trifluorotoluene(FID)					104.6	59-128		WG518290
TPH (GC/FID) High Fraction	ppm	74.0	4.60	60	116.	50-150	L498448-01	WG518251
o-Terphenyl					91.05	50-150		WG518251
1-Methylnaphthalene	mg/kg	0.0481	0	.033	146.*	19-131	L498483-01	WG518323
2-Chloronaphthalene	mg/kg	0.0335	0	.033	101.	38-117	L498483-01	WG518323
2-Methylnaphthalene	mg/kg	0.0562	0	.033	170.*	18-125	L498483-01	WG518323
Acenaphthene	mg/kg	0.0345	0	.033	104.	31-120	L498483-01	WG518323
Acenaphthylene	mg/kg	0.0343	0	.033	104.	34-116	L498483-01	WG518323
Anthracene	mg/kg	0.0366	0	.033	111.	32-131	L498483-01	WG518323
Benzo(a)anthracene	mg/kg	0.0316	0	.033	95.7	32-131	L498483-01	WG518323
Benzo(a)pyrene	mg/kg	0.0328	0	.033	99.5	28-130	L498483-01	WG518323
Benzo(b)fluoranthene	mg/kg	0.0343	0	.033	104.	37-130	L498483-01	WG518323
Benzo(g,h,i)perylene	mg/kg	0.0345	0	.033	104.	10-134	L498483-01	WG518323
Benzo(k)fluoranthene	mg/kg	0.0347	0	.033	105.	31-129	L498483-01	WG518323
Chrysene	mg/kg	0.0321	0	.033	97.4	25-137	L498483-01	WG518323
Dibenz(a,h)anthracene	mg/kg	0.0340	0	.033	103.	20-134	L498483-01	WG518323
Fluoranthene	mg/kg	0.0345	0	.033	104.	27-138	L498483-01	WG518323

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L498453

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

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Fluorene	mg/kg	0.0385	0	.033	116.	26-136	L498483-01	WG518323
Indeno(1,2,3-cd)pyrene	mg/kg	0.0341	0	.033	103.	16-135	L498483-01	WG518323
Naphthalene	mg/kg	0.0350	0	.033	106.	22-121	L498483-01	WG518323
Phenanthrene	mg/kg	0.0407	0	.033	123.	27-133	L498483-01	WG518323
Pyrene	mg/kg	0.0347	0	.033	105.	22-133	L498483-01	WG518323
2-Fluorobiphenyl					99.84	33-114		WG518323
Nitrobenzene-d5					73.08	21-120		WG518323
p-Terphenyl-d14					98.00	18-142		WG518323
Chromium,Hexavalent	mg/kg	12.5	0	20	62.4	50-150	L497829-01	WG518115
Arsenic	mg/kg	51.6	7.10	50	89.0	75-125	L498538-07	WG518356
Barium	mg/kg	166.	120.	50	92.0	75-125	L498538-07	WG518356
Cadmium	mg/kg	46.9	0	50	93.8	75-125	L498538-07	WG518356
Chromium	mg/kg	70.3	26.0	50	88.6	75-125	L498538-07	WG518356
Copper	mg/kg	74.9	28.1	50	93.6	75-125	L498538-07	WG518356
Lead	mg/kg	59.1	14.0	50	90.2	75-125	L498538-07	WG518356
Nickel	mg/kg	71.6	31.6	50	80.0	75-125	L498538-07	WG518356
Selenium	mg/kg	47.5	7.90	50	79.2	75-125	L498538-07	WG518356
Silver	mg/kg	46.0	0	50	92.0	75-125	L498538-07	WG518356
Zinc	mg/kg	109.	63.5	50	91.0	75-125	L498538-07	WG518356

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Mercury	mg/kg	0.301	0.310	91.6	70-130	2.95	20	L498439-08	WG518291
Benzene	mg/kg	0.0410	0.0403	81.9	32-137	1.63	39	L498482-02	WG518290
Ethylbenzene	mg/kg	0.0424	0.0421	84.8	10-150	0.610	44	L498482-02	WG518290
Toluene	mg/kg	0.0417	0.0413	83.4	20-142	0.890	42	L498482-02	WG518290
Total Xylene	mg/kg	0.128	0.127	85.5	16-141	0.560	46	L498482-02	WG518290
a,a,a-Trifluorotoluene(PID)				100.5	54-144				WG518290
TPH (GC/FID) Low Fraction	mg/kg	4.16	4.77	75.6	55-109	13.7	20	L498482-02	WG518290
a,a,a-Trifluorotoluene(FID)				91.56	59-128				WG518290
TPH (GC/FID) High Fraction	ppm	45.9	74.0	68.8	50-150	46.8*	25	L498448-01	WG518251
o-Terphenyl				78.74	50-150				WG518251
1-Methylnaphthalene	mg/kg	0.0360	0.0481	109.	19-131	28.9	30	L498483-01	WG518323
2-Chloronaphthalene	mg/kg	0.0331	0.0335	100.	38-117	1.02	26	L498483-01	WG518323
2-Methylnaphthalene	mg/kg	0.0357	0.0562	108.	18-125	44.6*	29	L498483-01	WG518323
Acenaphthene	mg/kg	0.0321	0.0345	97.4	31-120	7.05	30	L498483-01	WG518323
Acenaphthylene	mg/kg	0.0319	0.0343	96.6	34-116	7.26	29	L498483-01	WG518323
Anthracene	mg/kg	0.0334	0.0366	101.	32-131	9.16	26	L498483-01	WG518323
Benzo(a)anthracene	mg/kg	0.0333	0.0316	101.	32-131	5.29	31	L498483-01	WG518323
Benzo(a)pyrene	mg/kg	0.0342	0.0328	104.	28-130	4.19	28	L498483-01	WG518323
Benzo(b)fluoranthene	mg/kg	0.0358	0.0343	108.	37-130	4.23	41	L498483-01	WG518323
Benzo(g,h,i)perylene	mg/kg	0.0351	0.0345	106.	10-134	1.67	26	L498483-01	WG518323
Benzo(k)fluoranthene	mg/kg	0.0347	0.0347	105.	31-129	0.0179	42	L498483-01	WG518323
Chrysene	mg/kg	0.0315	0.0321	95.5	25-137	1.89	22	L498483-01	WG518323
Dibenz(a,h)anthracene	mg/kg	0.0341	0.0340	103.	20-134	0.198	25	L498483-01	WG518323
Fluoranthene	mg/kg	0.0338	0.0345	102.	27-138	1.97	35	L498483-01	WG518323
Fluorene	mg/kg	0.0344	0.0385	104.	26-136	11.1	30	L498483-01	WG518323
Indeno(1,2,3-cd)pyrene	mg/kg	0.0357	0.0341	108.	16-135	4.84	26	L498483-01	WG518323

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Naphthalene	mg/kg	0.0317	0.0350	95.9	22-121	9.99	30	L498483-01	WG518323
Phenanthrene	mg/kg	0.0349	0.0407	106.	27-133	15.3	36	L498483-01	WG518323
Pyrene	mg/kg	0.0328	0.0347	99.4	22-133	5.53	33	L498483-01	WG518323
2-Fluorobiphenyl				98.42	33-114				WG518323
Nitrobenzene-d5				76.57	21-120				WG518323
p-Terphenyl-d14				98.81	18-142				WG518323
Chromium, Hexavalent	mg/kg	14.3	12.5	71.4	50-150	13.5	20	L497829-01	WG518115
Arsenic	mg/kg	49.9	51.6	85.6	75-125	3.35	20	L498538-07	WG518356
Barium	mg/kg	152.	166.	64.0*	75-125	8.81	20	L498538-07	WG518356
Cadmium	mg/kg	44.7	46.9	89.4	75-125	4.80	20	L498538-07	WG518356
Chromium	mg/kg	65.0	70.3	78.0	75-125	7.83	20	L498538-07	WG518356
Copper	mg/kg	69.0	74.9	81.8	75-125	8.20	20	L498538-07	WG518356
Lead	mg/kg	55.6	59.1	83.2	75-125	6.10	20	L498538-07	WG518356
Nickel	mg/kg	66.4	71.6	69.6*	75-125	7.54	20	L498538-07	WG518356
Selenium	mg/kg	49.0	47.5	82.2	75-125	3.11	20	L498538-07	WG518356
Silver	mg/kg	44.2	46.0	88.4	75-125	3.99	20	L498538-07	WG518356
Zinc	mg/kg	100.	109.	73.0*	75-125	8.61	20	L498538-07	WG518356

Batch number /Run number / Sample number cross reference

WG518291: R1546909: L498453-01  
WG518323: R1547232: L498453-01  
WG518251: R1548411: L498453-01  
WG518290: R1549050: L498453-01  
WG518370: R1549572: L498453-01  
WG518552: R1550410: L498453-01  
WG518115: R1551049: L498453-01  
WG518764: R1551831: L498453-01  
WG518734: R1552269: L498453-01  
WG518356: R1553729: L498453-01

\* \* Calculations are performed prior to rounding of reported values.

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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

January 28, 2011

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.



03/24/11

## Technical Report for

**ENCANA**

**B-07 Pit Closure**

**Accutest Job Number: T70782**

**Sampling Date: 03/09/11**

### Report to:

EnCana Oil & Gas  
2717 Co. Rd. 215  
Parachute, CO 81635  
christopher.hines@encana.com

**ATTN: Chris Hines**

**Total number of pages in report: 52**



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.

A handwritten signature in black ink that reads 'Paul K Canevaro'.

**Paul Canevaro**  
**Laboratory Director**

**Client Service contact: Sylvia Garza 713-271-4700**

Certifications: TX (T104704220-10-3) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)  
OK (9103)

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



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Sample Summary

ENCANA

Job No: T70782

B-07 Pit Closure

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T70782-1	03/09/11	10:00	03/10/11	SO	Soil	BO7-PITCOMP-030911
T70782-1A	03/09/11	10:00	03/10/11	SO	Soil	BO7-PITCOMP-030911

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

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** ENCANA

**Job No** T70782

**Site:** B-07 Pit Closure

**Report Date** 3/23/2011 6:05:43 PM

1 Sample(s) were collected on 03/09/2011 and were received at Accutest on 03/10/2011 properly preserved, at 3.4 Deg. C and intact. These Samples received an Accutest job number of T70782. 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

<b>Matrix</b> SO	<b>Batch ID:</b> VZ3148
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T70921-12MS, T70921-12MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Toluene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Toluene are outside control limits. Probable cause due to matrix interference.

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

<b>Matrix</b> SO	<b>Batch ID:</b> OP17751
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T70866-1MS, T70866-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Anthracene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for Anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Recovery(s) for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Phenanthrene, Pyrene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

### Volatiles by GC By Method SW846 8015

<b>Matrix</b> SO	<b>Batch ID:</b> GBB302
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T70782-1MS, T70782-1MSD 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

<b>Matrix</b> SO	<b>Batch ID:</b> OP17848
------------------	--------------------------

- 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) T70782-1MS, T70782-1MSD were used as the QC samples indicated.

## Metals By Method SW846 6010B

**Matrix** AQ

**Batch ID:** MP14224

- 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) T70782-1ADUP, T70782-1ASDL were used as the QC samples for metals.

**Matrix** SO

**Batch ID:** MP14192

- 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) T70782-1DUP, T70782-1MS, T70782-1MSD, T70782-1SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Chromium are outside control limits. Probable cause due to matrix interference.
- RPD(s) for MSD for Barium are outside control limits for sample MP14192-S2. High RPD due to possible sample nonhomogeneity or matrix interference.
- RPD(s) for Serial Dilution for Arsenic, Barium, Chromium, Copper, Zinc are outside control limits for sample MP14192-SD1. Serial dilution indicates possible matrix interference.
- T70782-1 for Nickel: Elevated reporting limit due to matrix interference.
- T70782-1 for Lead: Elevated reporting limit due to matrix interference.

## Metals By Method SW846 7471A

**Matrix** SO

**Batch ID:** MP14189

- 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) T70830-6DUP, T70830-6MS, T70830-6MSD were used as the QC samples for metals.

## Wet Chemistry By Method LADNR 29B

**Matrix** LEACHATE

**Batch ID:** GN29370

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method LADNR29B

**Matrix** SO

**Batch ID:** MP14224

- T70782-1A 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:** GN29387

- Sample(s) T70830-1DUP were used as the QC samples for Solids, Percent.

## Wet Chemistry By Method SW846 3060/7196A

**Matrix** SO

**Batch ID:** GN29435

- All method blanks for this batch meet method specific criteria.
- Sample(s) T70782-1DUP, T70782-1MS were used as the QC samples for Chromium, Hexavalent.
- The following samples were run outside of holding time for method SW846 3060/7196A: T70782-1

**Wet Chemistry By Method SW846 6010/7196A M****Matrix** SO**Batch ID:** R30924

- The following samples were run outside of holding time for method SW846 6010/7196A M: T70782-1
- T70782-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

**Wet Chemistry By Method SW846 9045C****Matrix** SO**Batch ID:** GN29626

- Sample(s) T70782-1DUP were used as the QC samples for pH.
- The following samples were run outside of holding time for method SW846 9045C: T70782-1

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

<b>Client Sample ID:</b>	BO7-PITCOMP-030911	<b>Date Sampled:</b>	03/09/11
<b>Lab Sample ID:</b>	T70782-1	<b>Date Received:</b>	03/10/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	71.2
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	B-07 Pit Closure		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z014867.D	1	03/14/11	FI	n/a	n/a	VZ3148
Run #2							

	Initial Weight	Final Volume
Run #1	5.71 g	5.0 ml
Run #2		

## Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0049	mg/kg	
108-88-3	Toluene	ND	0.0049	mg/kg	
100-41-4	Ethylbenzene	ND	0.0049	mg/kg	
1330-20-7	Xylene (total)	ND	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-121%
2037-26-5	Toluene-D8	114%		76-132%
460-00-4	4-Bromofluorobenzene	103%		73-165%
17060-07-0	1,2-Dichloroethane-D4	88%		57-122%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

<b>Client Sample ID:</b>	BO7-PITCOMP-030911	<b>Date Sampled:</b>	03/09/11
<b>Lab Sample ID:</b>	T70782-1	<b>Date Received:</b>	03/10/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	71.2
<b>Method:</b>	SW846 8270C BY SIM SW846 3550B		
<b>Project:</b>	B-07 Pit Closure		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V3932.D	1	03/14/11	AM	03/14/11	OP17751	EV233
Run #2							

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

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.0154	0.0093	mg/kg	
208-96-8	Acenaphthylene	ND	0.0093	mg/kg	
120-12-7	Anthracene	ND	0.0093	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0093	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0093	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0135	0.0093	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.0093	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0093	mg/kg	
218-01-9	Chrysene	ND	0.0093	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0093	mg/kg	
206-44-0	Fluoranthene	ND	0.0093	mg/kg	
86-73-7	Fluorene	0.0144	0.0093	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0093	mg/kg	
90-12-0	1-Methylnaphthalene	0.0119	0.0093	mg/kg	
91-57-6	2-Methylnaphthalene	0.0243	0.0093	mg/kg	
91-20-3	Naphthalene	0.0940	0.0093	mg/kg	
85-01-8	Phenanthrene	0.0211	0.0093	mg/kg	
129-00-0	Pyrene	ND	0.0093	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	68%		10-127%
321-60-8	2-Fluorobiphenyl	70%		11-133%
1718-51-0	Terphenyl-d14	110%		15-187%

ND = Not detected

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:** BO7-PITCOMP-030911**Lab Sample ID:** T70782-1**Date Sampled:** 03/09/11**Matrix:** SO - Soil**Date Received:** 03/10/11**Method:** SW846 8015**Percent Solids:** 71.2**Project:** B-07 Pit Closure

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB0006135.D	1	03/11/11	AT	n/a	n/a	GBB302
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.01 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	Units	Q
	TPH-GRO (C6-C10)	ND	9.0	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		46-127%
98-08-8	aaa-Trifluorotoluene	104%		44-120%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	BO7-PITCOMP-030911			<b>Date Sampled:</b>	03/09/11
<b>Lab Sample ID:</b>	T70782-1			<b>Date Received:</b>	03/10/11
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	71.2
<b>Method:</b>	SW846 8015 M    SW846 3550B				
<b>Project:</b>	B-07 Pit Closure				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	IF205038.D	1	03/22/11	HD	03/21/11	OP17848	GIB1182
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH (C10-C28)	8.69	4.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	69%		33-115%	

ND = Not detected  
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:** BO7-PITCOMP-030911**Lab Sample ID:** T70782-1**Matrix:** SO - Soil**Project:** B-07 Pit Closure**Date Sampled:** 03/09/11**Date Received:** 03/10/11**Percent Solids:** 71.2**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	13.2	0.82	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Barium	488	16	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Cadmium	0.54	0.41	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Chromium	24.1	0.82	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Copper	23.7	2.1	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Lead <sup>a</sup>	18.4	4.1	mg/kg	5	03/14/11	03/15/11 TW	SW846 6010B <sup>3</sup>	SW846 3050B <sup>5</sup>
Mercury	< 0.021	0.021	mg/kg	1	03/12/11	03/12/11 CN	SW846 7471A <sup>1</sup>	SW846 7471A <sup>4</sup>
Nickel <sup>a</sup>	22.1	16	mg/kg	5	03/14/11	03/15/11 TW	SW846 6010B <sup>3</sup>	SW846 3050B <sup>5</sup>
Selenium	< 0.82	0.82	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Silver	< 0.82	0.82	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Zinc	69.3	1.6	mg/kg	1	03/14/11	03/14/11 TW	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>

(1) Instrument QC Batch: MA5560

(2) Instrument QC Batch: MA5562

(3) Instrument QC Batch: MA5566

(4) Prep QC Batch: MP14189

(5) Prep QC Batch: MP14192

(a) Elevated reporting limit due to matrix interference.

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** BO7-PITCOMP-030911**Lab Sample ID:** T70782-1**Matrix:** SO - Soil**Project:** B-07 Pit Closure**Date Sampled:** 03/09/11**Date Received:** 03/10/11**Percent Solids:** 71.2

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 2.8	2.8	mg/kg	1	03/15/11 11:00	KD	SW846 3060/7196A
Chromium, Trivalent <sup>a</sup>	23.5	3.6	mg/kg	1	03/15/11 11:00	KD	SW846 6010/7196A M
Solids, Percent	71.2		%	1	03/11/11	LA	SM 2540 G
Specific Conductivity	942	1.0	umhos/cm	1	03/11/11 09:00	KD	EPA 120.1
pH	8.31		su	1	03/21/11 17:50	LA	SW846 9045C

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

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BO7-PITCOMP-030911	<b>Date Sampled:</b>	03/09/11
<b>Lab Sample ID:</b>	T70782-1A	<b>Date Received:</b>	03/10/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	71.2
<b>Project:</b>	B-07 Pit Closure		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	156	25	mg/l	5	03/16/11	03/16/11 TW	SW846 6010B <sup>1</sup>	LADNR 29B <sup>2</sup>
Magnesium	102	25	mg/l	5	03/16/11	03/16/11 TW	SW846 6010B <sup>1</sup>	LADNR 29B <sup>2</sup>
Sodium	769	25	mg/l	5	03/16/11	03/16/11 TW	SW846 6010B <sup>1</sup>	LADNR 29B <sup>2</sup>

(1) Instrument QC Batch: MA5568  
(2) Prep QC Batch: MP14224

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	BO7-PITCOMP-030911	<b>Date Sampled:</b>	03/09/11
<b>Lab Sample ID:</b>	T70782-1A	<b>Date Received:</b>	03/10/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	71.2
<b>Project:</b>	B-07 Pit Closure		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	11.8		ratio	1	03/16/11 13:02	TW	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

4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
[www.acutest.com](http://www.acutest.com)

[illegible]

## T70782: Chain of Custody

Page 1 of 3



# SAMPLE INSPECTION FORM

Accutest Job Number: T70782 Client: Enxana Oil & Gas Date/Time Received: 3/10/11 945  
 # of Coolers Received: 1 Thermometer #: 12 Gun 04 Temperature Adjustment Factor: 0  
 Cooler Temperatures (initial/adjusted): #1: 3.4/3.4 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_ #5: \_\_\_\_\_  
 #6: \_\_\_\_\_ #7: \_\_\_\_\_ #8: \_\_\_\_\_ #9: \_\_\_\_\_ #10: \_\_\_\_\_ #11: \_\_\_\_\_ #12: \_\_\_\_\_  
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

## COOLER INFORMATION

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

## CHAIN OF CUSTODY

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

## SAMPLE INFORMATION

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

## TRIP BLANK INFORMATION

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

Number of Encores? \_\_\_\_\_

Number of 5035 kits? \_\_\_\_\_

Number of lab-filtered metals? \_\_\_\_\_

Summary of Discrepancies:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TECHNICIAN SIGNATURE/DATE:

Janessa Gonzalez 3/10/11

INFORMATION AND SAMPLE LABELING VERIFIED BY:

QC 3/10/11

## CORRECTIVE ACTIONS

Client Representative Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Accutest Representative: \_\_\_\_\_

Via: Phone Email

Client Instructions:

i:\mwalker\form\samplemanagement SM023 Revised 8/11/10

**T70782: Chain of Custody**

**Page 2 of 3**

JOB #: T70782 DATE/TIME RECEIVED: 3/10/11 0945  
CLIENT: an cana oil & gas INITIALS: vh

[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

Page 3 of 3

## GC/MS Volatiles

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### QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

**Job Number:** T70782

**Account:** ENCACOP ENCANA

**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3148-MB	Z014854.D	1	03/14/11	FI	n/a	n/a	VZ3148

The QC reported here applies to the following samples:

Method: SW846 8260B

T70782-1

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

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	103% 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	87% 57-122%

## Blank Spike Summary

Page 1 of 1

**Job Number:** T70782

**Account:** ENCACOP ENCANA

**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3148-BS	Z014852.D	1	03/14/11	FI	n/a	n/a	VZ3148

The QC reported here applies to the following samples:

Method: SW846 8260B

T70782-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	45.2	90	70-114
100-41-4	Ethylbenzene	50	44.6	89	60-119
108-88-3	Toluene	50	43.2	86	68-115
1330-20-7	Xylene (total)	150	132	88	61-115

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	96%	70-121%
2037-26-5	Toluene-D8	101%	76-132%
460-00-4	4-Bromofluorobenzene	92%	73-165%
17060-07-0	1,2-Dichloroethane-D4	83%	57-122%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** T70782  
**Account:** ENCACOP ENCANA  
**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T70921-12MS	Z014856.D	1	03/14/11	FI	n/a	n/a	VZ3148
T70921-12MSD	Z014857.D	1	03/14/11	FI	n/a	n/a	VZ3148
T70921-12	Z014855.D	1	03/14/11	FI	n/a	n/a	VZ3148

The QC reported here applies to the following samples:

Method: SW846 8260B

T70782-1

CAS No.	Compound	T70921-12 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.4 U		59.6	60.6	102	58.0	95	4	70-114/38
100-41-4	Ethylbenzene	4.4 U		59.6	65.4	110	63.7	104	3	60-119/40
108-88-3	Toluene	4.4 U		59.6	79.5	133*	73.8	121*	7	68-115/38
1330-20-7	Xylene (total)	13 U		179	196	110	190	104	3	61-115/39

CAS No.	Surrogate Recoveries	MS	MSD	T70921-12	Limits
1868-53-7	Dibromofluoromethane	99%	98%	100%	70-121%
2037-26-5	Toluene-D8	111%	110%	108%	76-132%
460-00-4	4-Bromofluorobenzene	109%	105%	99%	73-165%
17060-07-0	1,2-Dichloroethane-D4	83%	85%	88%	57-122%

## GC/MS Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

**Job Number:** T70782  
**Account:** ENCACOP ENCANA  
**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17751-MB	J158160.D	1	03/14/11	SC	03/14/11	OP17751	EJ1092

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T70782-1

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

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	67% 10-127%
321-60-8	2-Fluorobiphenyl	69% 11-133%
1718-51-0	Terphenyl-d14	75% 15-187%



## Blank Spike Summary

Page 1 of 1

**Job Number:** T70782  
**Account:** ENCACOP ENCANA  
**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17751-BS	J158161.D	1	03/14/11	SC	03/14/11	OP17751	EJ1092

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T70782-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	167	147	88	18-118
208-96-8	Acenaphthylene	167	160	96	35-125
120-12-7	Anthracene	167	156	94	24-116
56-55-3	Benzo(a)anthracene	167	168	101	32-132
50-32-8	Benzo(a)pyrene	167	149	89	36-130
205-99-2	Benzo(b)fluoranthene	167	173	104	35-134
191-24-2	Benzo(g,h,i)perylene	167	194	116	18-149
207-08-9	Benzo(k)fluoranthene	167	183	110	30-131
218-01-9	Chrysene	167	156	94	37-124
53-70-3	Dibenzo(a,h)anthracene	167	176	106	23-150
206-44-0	Fluoranthene	167	189	113	28-118
86-73-7	Fluorene	167	169	101	32-106
193-39-5	Indeno(1,2,3-cd)pyrene	167	192	115	18-150
90-12-0	1-Methylnaphthalene	167	145	87	10-128
91-57-6	2-Methylnaphthalene	167	151	91	28-113
91-20-3	Naphthalene	167	135	81	31-106
85-01-8	Phenanthrene	167	166	100	37-112
129-00-0	Pyrene	167	134	80	24-132

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	95%	10-127%
321-60-8	2-Fluorobiphenyl	93%	11-133%
1718-51-0	Terphenyl-d14	79%	15-187%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** T70782  
**Account:** ENCACOP ENCANA  
**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17751-MS	J158173.D	2	03/14/11	SC	03/14/11	OP17751	EJ1092
OP17751-MSD	J158174.D	2	03/14/11	SC	03/14/11	OP17751	EJ1092
T70866-1 <sup>a</sup>	J158172.D	2	03/14/11	SC	03/14/11	OP17751	EJ1092
T70866-1	J158165.D	20	03/14/11	SC	03/14/11	OP17751	EJ1092

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T70782-1

CAS No.	Compound	T70866-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	185		189	270	46	243	32	11	10-153/80
208-96-8	Acenaphthylene	ND		189	175	93	192	102	9	10-144/71
120-12-7	Anthracene	626		189	420	-106* <sup>b</sup>	380	-127* <sup>b</sup>	10	10-176/57
56-55-3	Benzo(a)anthracene	1100 <sup>c</sup>		189	817	-150* <sup>b</sup>	766	-177* <sup>b</sup>	6	10-174/73
50-32-8	Benzo(a)pyrene	764		189	712	-23* <sup>b</sup>	611	-77* <sup>b</sup>	15	10-182/74
205-99-2	Benzo(b)fluoranthene	1380 <sup>c</sup>		189	852	-279* <sup>b</sup>	908	-250* <sup>b</sup>	6	10-188/86
191-24-2	Benzo(g,h,i)perylene	1160 <sup>c</sup>		189	1190	16	836	-172* <sup>b</sup>	35	10-150/62
207-08-9	Benzo(k)fluoranthene	382		189	497	63	346	-17* <sup>b</sup>	36	10-170/94
218-01-9	Chrysene	1280 <sup>c</sup>		189	907	-197* <sup>b</sup>	643	-338* <sup>b</sup>	34	10-165/73
53-70-3	Dibenzo(a,h)anthracene	277		189	456	96	384	58	17	10-192/74
206-44-0	Fluoranthene	2760 <sup>c</sup>		189	997	-932* <sup>b</sup>	795	-1042* <sup>b</sup>	23	10-141/73
86-73-7	Fluorene	218		189	281	35	247	17	13	10-164/72
193-39-5	Indeno(1,2,3-cd)pyrene	748		189	898	84	655	-45* <sup>b</sup>	31	10-150/73
90-12-0	1-Methylnaphthalene	40.6		189	166	66	184	76	10	10-154/82
91-57-6	2-Methylnaphthalene	78.8		189	184	56	206	68	11	10-171/75
91-20-3	Naphthalene	98.7		189	176	41	202	55	14	10-138/82
85-01-8	Phenanthrene	1240 <sup>c</sup>		189	875	-193* <sup>b</sup>	627	-325* <sup>b</sup>	33	10-191/77
129-00-0	Pyrene	4240 <sup>c</sup>		189	3730	-270* <sup>b</sup>	2830	-748* <sup>b</sup>	27	10-150/66

CAS No.	Surrogate Recoveries	MS	MSD	T70866-1	T70866-1	Limits
4165-60-0	Nitrobenzene-d5	62%	81%	67%	92%	10-127%
321-60-8	2-Fluorobiphenyl	67%	88%	43%	89%	11-133%
1718-51-0	Terphenyl-d14	132%	149%	120%	109%	15-187%

(a) Elevated reporting limits and internal standards are not within advisory limits due to matrix interference, confirmed by associated MS/MSD sample. Sample extract was viscous.

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

(c) 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

Page 1 of 1

**Job Number:** T70782

**Account:** ENCACOP ENCANA

**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBB302-MB	BB0006132.DI		03/11/11	AT	n/a	n/a	GBB302

The QC reported here applies to the following samples:

Method: SW846 8015

T70782-1

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	95%	46-127%
98-08-8	aaa-Trifluorotoluene	105%	44-120%

Blank Spike Summary

Job Number: T70782  
Account: ENCACOP ENCANA  
Project: B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBB302-BS	BB0006129.DI		03/11/11	AT	n/a	n/a	GBB302

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

T70782-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	0.4	0.371	93	78-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	99%	46-127%
98-08-8	aaa-Trifluorotoluene	109%	44-120%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T70782  
Account: ENCACOP ENCANA  
Project: B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T70782-1MS	BB0006136.DI		03/11/11	AT	n/a	n/a	GBB302
T70782-1MSD	BB0006137.DI		03/11/11	AT	n/a	n/a	GBB302
T70782-1	BB0006135.DI		03/11/11	AT	n/a	n/a	GBB302

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

T70782-1

CAS No.	Compound	T70782-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		36.1	34.2	95	33.7	93	1	78-115/14

CAS No.	Surrogate Recoveries	MS	MSD	T70782-1	Limits
460-00-4	4-Bromofluorobenzene	96%	101%	96%	46-127%
98-08-8	aaa-Trifluorotoluene	111%	111%	104%	44-120%

## GC Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

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

Method Blank Summary

Job Number: T70782  
Account: ENCACOP ENCANA  
Project: B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17848-MB	IF205030.D	1	03/22/11	HD	03/21/11	OP17848	GIB1182

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

T70782-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	78% 33-115%



## Blank Spike Summary

Page 1 of 1

**Job Number:** T70782

**Account:** ENCACOP ENCANA

**Project:** B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17848-BS	IF205032.D	1	03/22/11	HD	03/21/11	OP17848	GIB1182

The QC reported here applies to the following samples:

Method: SW846 8015 M

T70782-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH (C10-C28)	33.2	24.2	73	45-107

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	71%	33-115%

8.2.1

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Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T70782  
Account: ENCACOP ENCANA  
Project: B-07 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17848-MS	IF205034.D	1	03/22/11	HD	03/21/11	OP17848	GIB1182
OP17848-MSD	IF205036.D	1	03/22/11	HD	03/21/11	OP17848	GIB1182
T70782-1	IF205038.D	1	03/22/11	HD	03/21/11	OP17848	GIB1182

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

T70782-1

CAS No.	Compound	T70782-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C10-C28)	8.69		46.7	35.6	58	36.0	59	1	45-107/34

CAS No.	Surrogate Recoveries	MS	MSD	T70782-1	Limits
84-15-1	o-Terphenyl	75%	69%	69%	33-115%

## 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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14189  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 03/12/11

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.017	.0042	.0067	-0.0071	<0.017

Associated samples MP14189: T70782-1

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14189  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date:

03/12/11

03/12/11

Metal	T70830-6		RPD	QC Limits	T70830-6		Spikelot HGTXWS1	% Rec	QC Limits
	Original	DUP			Original	MS			
Mercury	0.093	0.11	16.7	0-20	0.093	0.38	0.299	96.0	75-125

Associated samples MP14189: T70782-1

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14189  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 03/12/11

Metal	T70830-6 Original	MSD	Spikelot HGTXWS1	% Rec	MSD RPD	QC Limit
Mercury	0.093	0.44	0.301	115.2	14.6	

Associated samples MP14189: T70782-1

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: T70782  
 Account: ENCACOP - ENCANA  
 Project: B-07 Pit Closure

QC Batch ID: MP14189  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 03/12/11

Metal	LCS Result	Spikelot HGLCD054 % Rec	QC Limits
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Mercury	7.6	7.34	103.5	72-128
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Associated samples MP14189: T70782-1

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14192  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 03/14/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.41	.73		
Antimony	0.50	.05	.085		
Arsenic	0.50	.085	.085	-0.024	<0.50
Barium	10	.049	.069	0.067	<10
Beryllium	0.25	.0028	.0055		
Boron	5.0	.07	.17		
Cadmium	0.25	.0055	.014	0.0055	<0.25
Calcium	250	.37	1.3		
Chromium	0.50	.012	.023	0.032	<0.50
Cobalt	2.5	.0075	.03		
Copper	1.3	.056	.056	0.0035	<1.3
Iron	5.0	.057	1.1		
Lead	0.50	.05	.05	-0.011	<0.50
Lithium	15	.1			
Magnesium	250	.38	1.3		
Manganese	0.75	.0027	.037		
Molybdenum	0.50	.02	.025		
Nickel	2.0	.035	.057	0.0	<2.0
Potassium	250	2	10		
Selenium	0.50	.077	.14	0.065	<0.50
Silver	0.50	.058	.058	-0.0015	<0.50
Sodium	250	.46	1.6		
Strontium	1.0	.0031	.059		
Thallium	0.50	.034	.04		
Tin	1.0	.035	.035		
Titanium	1.0	.015	.029		
Vanadium	2.5	.015	.034		
Zinc	1.0	.026	.084	0.15	<1.0

Associated samples MP14192: T70782-1

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14192  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

03/14/11

03/14/11

Metal	T70782-1 Original	DUP	RPD	QC Limits	T70782-1 Original	MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic	13.2	12.8	3.1	0-20	13.2	42.2	32.9	88.1	80-120
Barium	488	538	9.7	0-20	488	524	32.9	109.3	80-120
Beryllium									
Boron									
Cadmium	0.54	0.53	1.9	0-20	0.54	29.3	32.9	87.3	80-120
Calcium									
Chromium	24.1	24.4	1.2	0-20	24.1	51.6	32.9	83.5	80-120
Cobalt									
Copper	23.7	23.8	0.4	0-20	23.7	54.0	32.9	92.0	80-120
Iron									
Lead	18.3	18.7	1.6	0-20	18.3	52.3	32.9	102.9	80-120
Lithium									
Magnesium									
Manganese									
Molybdenum									
Nickel	23.9	23.7	7.0	0-20	23.9	56.7	32.9	105.1	80-120
Potassium									
Selenium	0.0	0.0	NC	0-20	0.0	27.9	32.9	84.7	80-120
Silver	0.0	0.0	NC	0-20	0.0	29.8	32.9	90.5	80-120
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	69.3	72.0	3.8	0-20	69.3	101	32.9	96.3	80-120

Associated samples MP14192: T70782-1

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14192  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 03/14/11

Metal	T70782-1 Original	MSD	Spikelet MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	13.2	39.9	32.9	81.2	5.6	20
Barium	488	681	32.9	586.8(a)	26.1 (b)	20
Beryllium						
Boron						
Cadmium	0.54	29.0	32.9	86.5	1.0	20
Calcium						
Chromium	24.1	48.9	32.9	75.4N(c)	5.4	20
Cobalt						
Copper	23.7	52.0	32.9	86.0	3.8	20
Iron						
Lead	18.3	51.1	32.9	99.4	2.3	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	23.9	55.7	32.9	102.2	1.8	20
Potassium						
Selenium	0.0	27.1	32.9	82.4	2.9	20
Silver	0.0	29.2	32.9	88.8	2.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	69.3	100	32.9	93.3	1.0	20

Associated samples MP14192: T70782-1

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.

(b) High RPD due to possible sample nonhomogeneity or matrix interference.

(c) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T70782  
 Account: ENCACOP - ENCANA  
 Project: B-07 Pit Closure

QC Batch ID: MP14192  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 03/14/11

Metal	LCS Result	Spikelot MPLCD054	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	142	158	89.9	82-118
Barium	333	348	95.7	81-119
Beryllium				
Boron				
Cadmium	170	187	90.9	82-118
Calcium				
Chromium	85.7	89.5	95.8	79-121
Cobalt				
Copper	123	129	95.3	84-117
Iron				
Lead	177	172	102.9	79-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	106	99	107.1	81-119
Potassium				
Selenium	137	148	92.6	78-121
Silver	59.0	66	89.4	66-134
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	350	394	88.8	80-119

Associated samples MP14192: T70782-1

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

# SERIAL DILUTION RESULTS SUMMARY

Login Number: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14192  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date: 03/14/11

Metal	T70782-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	161	183	14.2*(a)	0-10
Barium	5940	6800	14.3*(a)	0-10
Beryllium				
Boron				
Cadmium	6.54	6.63	1.4	0-10
Calcium				
Chromium	294	366	24.7*(a)	0-10
Cobalt				
Copper	289	323	11.9*(a)	0-10
Iron				
Lead	223	232	3.4	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	291	277	2.6	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	844	959	13.6*(a)	0-10

Associated samples MP14192: T70782-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14224  
Matrix Type: AQUEOUS

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

Prep Date: 03/16/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	12		
Antimony	5.0	1	1		
Arsenic	5.0	1.7	1		
Barium	200	.97	3.4		
Beryllium	5.0	.056	.16		
Boron	100	1.4	7.8		
Cadmium	4.0	.11	.09		
Calcium	5000	7.4	25	26.4	<5000
Chromium	10	.23	.27		
Cobalt	50	.15	.22		
Copper	25	1.1	5.9		
Iron	100	1.1	23		
Lead	3.0	1	1.8		
Lithium	300	2	2		
Magnesium	5000	7.7	7.9	24.1	<5000
Manganese	15	.054	1.9		
Molybdenum	10	.39	.2		
Nickel	40	.69	1.4		
Potassium	5000	39	45		
Selenium	5.0	1.5	.98		
Silver	10	1.2	.24		
Sodium	5000	9.2	100	21.9	<5000
Strontium	10	.061	.4		
Thallium	10	.67	1.2		
Tin	20	.69	2.8		
Titanium	20	.29	.3		
Vanadium	50	.3	.3		
Zinc	20	.51	3.5		

Associated samples MP14224: T70782-1A

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14224  
Matrix Type: AQUEOUS

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

Prep Date: 03/16/11

Metal	T70782-1A Original DUP		RPD	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	156000	158000	1.3	0-20
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	102000	104000	1.9	0-20
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	769000	776000	0.9	0-20
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP14224: T70782-1A

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: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

QC Batch ID: MP14224  
Matrix Type: AQUEOUS

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

Prep Date: 03/16/11

Metal	T70782-1A			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	156000	166000	6.9	0-10	
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	102000	107000	5.2	0-10	
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium	769000	818000	6.4	0-10	
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP14224: T70782-1A

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

## General Chemistry

### QC Data Summaries

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Includes the following where applicable:

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



METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN29435	2.0	<2.0	mg/kg	40	38.8	97.0	80-120%
Specific Conductivity	GN29370	1.0	<1.0	umhos/cm				

Associated Samples:  
Batch GN29370: T70782-1  
Batch GN29435: T70782-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN29435	T70782-1	mg/kg	<2.8	<2.8	6.9	0-20%
Solids, Percent	GN29387	T70830-1	%	78.3	78.6	0.4	0-5%
Specific Conductivity	GN29370	T70656-5	umhos/cm	1080	1080	0.4	0-10%
pH	GN29626	T70782-1	su	8.31	8.32	0.1	0-20%

Associated Samples:

Batch GN29370: T70782-1

Batch GN29387: T70782-1

Batch GN29435: T70782-1

Batch GN29626: T70782-1

(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: T70782  
Account: ENCACOP - ENCANA  
Project: B-07 Pit Closure

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN29435	T70782-1	mg/kg	<2.8	56	52.7	93.0	75-125%

Associated Samples:

Batch GN29435: T70782-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits