Laboratory Results Summary Table

05/28/2015

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

				Organic Compounds in Soil (mg/kg [ppm])																						Inorganics in Soil			Metals in Soil (mg/kg [ppm])											
	Allowable Concentration -->			500			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
Location	Sample Date:	Sample Matrix	Matrix Notes	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	Napthalene	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
P16OU	10/06/10	Cuttings		1300.8	0.8	1300	BDL	BDL	BDL	0.021	0.11	0.094	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.13	BDL	0.18	0.12	2.2	9.1	8.5	8.4	8400	BDL	22	BDL	17	6.9	0.033	15	2	BDL	37
P16OU	04/14/11	Cuttings		1100.64	0.64	1100																																
P16OU	06/28/11	Cuttings		1012	12	1000																																
P16OU	07/25/11	Cuttings		820	BDL	820																																
P16OU	12/12/11	Cuttings	resample for 7/25	390	BDL	390																																

Encana Oil and Gas (USA) Inc.
Environmental Compliance Group
Parachute Field Office
143 Diamond Avenue
Parachute, CO 81635

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

Monday October 18, 2010

Report Number: L482838
Samples Received: 10/07/10
Client Project:

Description: P16OU Cuttings

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

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
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.

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

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REPORT OF ANALYSIS

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

October 18, 2010

ESC Sample # : L482838-01

Date Received : October 07, 2010
Description : P16OU Cuttings

Site ID :

Sample ID : P16OU - CUTTINGS - 100610

Project # :

Collected By : Blair Rollins
Collection Date : 10/06/10 14:35

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	10/09/10	1
Chromium,Trivalent	22.	0.50	mg/kg	Calc.	10/13/10	1
ORP	150		mV	2580	10/11/10	1
pH	8.5		su	9045D	10/09/10	1
Sodium Adsorption Ratio	9.1			Calc.	10/14/10	10
Specific Conductance	2200		umhos/cm	9050AMod	10/14/10	1
Mercury	0.033	0.020	mg/kg	7471	10/11/10	1
Arsenic	8.4	5.0	mg/kg	6010B	10/14/10	5
Barium	8400	1.2	mg/kg	6010B	10/13/10	5
Cadmium	BDL	0.25	mg/kg	6010B	10/13/10	1
Chromium	22.	0.50	mg/kg	6010B	10/13/10	1
Copper	17.	1.0	mg/kg	6010B	10/13/10	1
Lead	6.9	0.25	mg/kg	6010B	10/13/10	1
Nickel	15.	1.0	mg/kg	6010B	10/13/10	1
Selenium	2.0	1.0	mg/kg	6010B	10/13/10	1
Silver	BDL	0.50	mg/kg	6010B	10/13/10	1
Zinc	37.	1.5	mg/kg	6010B	10/13/10	1
TPH (GC/FID) Low Fraction	0.80	0.50	mg/kg	8015D/GRO	10/11/10	5
Surrogate Recovery (70-130)						
a,a,a-Trifluorotoluene(FID)	96.8		% Rec.	602/8015	10/11/10	5
Benzene	BDL	0.0050	mg/kg	8260B	10/08/10	5
Toluene	BDL	0.025	mg/kg	8260B	10/08/10	5
Ethylbenzene	BDL	0.0050	mg/kg	8260B	10/08/10	5
Total Xylenes	0.021	0.015	mg/kg	8260B	10/08/10	5
Surrogate Recovery						
Toluene-d8	103.		% Rec.	8260B	10/08/10	5
Dibromofluoromethane	103.		% Rec.	8260B	10/08/10	5
a,a,a-Trifluorotoluene	105.		% Rec.	8260B	10/08/10	5
4-Bromofluorobenzene	103.		% Rec.	8260B	10/08/10	5
TPH (GC/FID) High Fraction	1300	80.	mg/kg	3546/DRO	10/14/10	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	10/14/10	20

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L482838-01 (PH) - 8.5@21.0c

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Chris Hines or Brad Kieding
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
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October 18, 2010

ESC Sample # : L482838-01

Date Received : October 07, 2010
Description : P16OU Cuttings

Site ID :

Sample ID : P16OU - CUTTINGS - 100610

Project # :

Collected By : Blair Rollins
Collection Date : 10/06/10 14:35

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	0.094	0.060	mg/kg	8270C-SIM	10/17/10	10
Acenaphthene	0.11	0.060	mg/kg	8270C-SIM	10/17/10	10
Acenaphthylene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Benzo(a)anthracene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Benzo(a)pyrene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Benzo(b)fluoranthene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Benzo(g,h,i)perylene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Benzo(k)fluoranthene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Chrysene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Dibenz(a,h)anthracene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Fluoranthene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Fluorene	0.13	0.060	mg/kg	8270C-SIM	10/17/10	10
Indeno(1,2,3-cd)pyrene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Naphthalene	0.18	0.060	mg/kg	8270C-SIM	10/17/10	10
Phenanthrene	0.15	0.060	mg/kg	8270C-SIM	10/17/10	10
Pyrene	0.12	0.060	mg/kg	8270C-SIM	10/17/10	10
1-Methylnaphthalene	0.44	0.060	mg/kg	8270C-SIM	10/17/10	10
2-Methylnaphthalene	0.52	0.060	mg/kg	8270C-SIM	10/17/10	10
2-Chloronaphthalene	BDL	0.060	mg/kg	8270C-SIM	10/17/10	10
Surrogate Recovery						
Nitrobenzene-d5	149.		% Rec.	8270C-SIM	10/17/10	10
2-Fluorobiphenyl	128.		% Rec.	8270C-SIM	10/17/10	10
p-Terphenyl-d14	102.		% Rec.	8270C-SIM	10/17/10	10

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 10/18/10 12:41 Printed: 10/18/10 12:42
L482838-01 (PH) - 8.5@21.0c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L482838-01	WG502936	SAMP	Barium	R1426376	B
	WG503513	SAMP	2-Chloronaphthalene	R1429988	J3
	WG503513	SAMP	Nitrobenzene-d5	R1429988	J1
	WG503513	SAMP	2-Fluorobiphenyl	R1429988	J1
	WG502959	SAMP	o-Terphenyl	R1426549	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
B	(EPA) - The indicated compound was found in the associated method blank as well as the laboratory sample.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J3	The associated batch QC was outside the established quality control range for precision.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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 Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography 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
10/18/10 at 12:42:08

TSR Signing Reports: 358
R5 - Desired TAT

Log all samples beginning with different sample numbers to separate reports. Example- M34 N PIT and M34 S PIT go on one L# together, but M34 S PIT and E34 S PIT would go on separate L #s.

Sample: L482838-01 Account: ENCANACO Received: 10/07/10 09:00 Due Date: 10/14/10 00:00 RPT Date: 10/18/10 12:41

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Quality Assurance Report
Level II

L482838

October 18, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Chromium,Hexavalent	< 2	mg/kg			WG502351	10/09/10 11:50
pH	6.30	su			WG502423	10/09/10 11:14
Benzene	< .001	mg/kg			WG502296	10/08/10 14:18
Ethylbenzene	< .001	mg/kg			WG502296	10/08/10 14:18
Toluene	< .005	mg/kg			WG502296	10/08/10 14:18
Total Xylenes	< .003	mg/kg			WG502296	10/08/10 14:18
4-Bromofluorobenzene		% Rec.	97.64	59-140	WG502296	10/08/10 14:18
Dibromofluoromethane		% Rec.	108.0	63-139	WG502296	10/08/10 14:18
Toluene-d8		% Rec.	105.4	84-116	WG502296	10/08/10 14:18
a,a,a-Trifluorotoluene		% Rec.	103.4	80-118	WG502296	10/08/10 14:18
Mercury	< .02	mg/kg			WG502574	10/11/10 11:38
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG502647	10/11/10 09:54
a,a,a-Trifluorotoluene(FID)		% Rec.	97.54	59-128	WG502647	10/11/10 09:54
Arsenic	< 1	mg/kg			WG502936	10/13/10 22:12
Barium	1.05	mg/kg			WG502936	10/13/10 22:12
Cadmium	< .25	mg/kg			WG502936	10/13/10 22:12
Chromium	< .5	mg/kg			WG502936	10/13/10 22:12
Copper	< 1	mg/kg			WG502936	10/13/10 22:12
Lead	< .25	mg/kg			WG502936	10/13/10 22:12
Nickel	< 1	mg/kg			WG502936	10/13/10 22:12
Selenium	< 1	mg/kg			WG502936	10/13/10 22:12
Silver	< .5	mg/kg			WG502936	10/13/10 22:12
Zinc	< 1.5	mg/kg			WG502936	10/13/10 22:12
TPH (GC/FID) High Fraction	< 4	ppm			WG502959	10/13/10 21:37
o-Terphenyl		% Rec.	94.79	50-150	WG502959	10/13/10 21:37
Specific Conductance	2.00	umhos/cm			WG503224	10/14/10 14:35
1-Methylnaphthalene	< .006	mg/kg			WG503513	10/16/10 08:08
2-Chloronaphthalene	< .006	mg/kg			WG503513	10/16/10 08:08
2-Methylnaphthalene	< .006	mg/kg			WG503513	10/16/10 08:08
Acenaphthene	< .006	mg/kg			WG503513	10/16/10 08:08
Acenaphthylene	< .006	mg/kg			WG503513	10/16/10 08:08
Anthracene	< .006	mg/kg			WG503513	10/16/10 08:08
Benzo(a)anthracene	< .006	mg/kg			WG503513	10/16/10 08:08
Benzo(a)pyrene	< .006	mg/kg			WG503513	10/16/10 08:08
Benzo(b)fluoranthene	< .006	mg/kg			WG503513	10/16/10 08:08
Benzo(g,h,i)perylene	< .006	mg/kg			WG503513	10/16/10 08:08
Benzo(k)fluoranthene	< .006	mg/kg			WG503513	10/16/10 08:08
Chrysene	< .006	mg/kg			WG503513	10/16/10 08:08
Dibenz(a,h)anthracene	< .006	mg/kg			WG503513	10/16/10 08:08
Fluoranthene	< .006	mg/kg			WG503513	10/16/10 08:08
Fluorene	< .006	mg/kg			WG503513	10/16/10 08:08
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG503513	10/16/10 08:08
Naphthalene	< .006	mg/kg			WG503513	10/16/10 08:08

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L482838

October 18, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Phenanthrene	< .006	mg/kg			WG503513	10/16/10 08:08
Pyrene	< .006	mg/kg			WG503513	10/16/10 08:08
2-Fluorobiphenyl		% Rec.	56.13	21-120	WG503513	10/16/10 08:08
Nitrobenzene-d5		% Rec.	55.74	33-114	WG503513	10/16/10 08:08
p-Terphenyl-d14		% Rec.	69.78	18-142	WG503513	10/16/10 08:08

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Chromium,Hexavalent	mg/kg	0	0	0	20	L482512-01	WG502351
pH	su	8.20	8.30	1.21*	1	L482729-35	WG502423
pH	su	8.20	8.20	0	1	L482729-43	WG502423
Mercury	mg/kg	0.0300	0.0290	4.05	20	L482738-19	WG502574
ORP	mV	84.0	90.0	6.90	20	L482930-01	WG502368
ORP	mV	110.	110.	3.57	20	L482930-02	WG502368
Arsenic	mg/kg	3.70	3.90	4.99	20	L482847-31	WG502936
Barium	mg/kg	90.0	84.0	6.34	20	L482847-31	WG502936
Cadmium	mg/kg	0	0	0	20	L482847-31	WG502936
Chromium	mg/kg	10.0	10.0	0.300	20	L482847-31	WG502936
Copper	mg/kg	11.0	11.3	0	20	L482847-31	WG502936
Lead	mg/kg	8.60	8.50	0.587	20	L482847-31	WG502936
Nickel	mg/kg	13.0	13.4	0	20	L482847-31	WG502936
Selenium	mg/kg	5.10	5.40	5.71	20	L482847-31	WG502936
Silver	mg/kg	0	0	0	20	L482847-31	WG502936
Zinc	mg/kg	41.0	42.0	3.14	20	L482847-31	WG502936
Specific Conductance	umhos/cm	180.	140.	27.0*	20	L482729-36	WG503224
Specific Conductance	umhos/cm	230.	210.	9.44	20	L482729-45	WG503224

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Chromium,Hexavalent	mg/kg	100	69.7	69.7	50-143	WG502351
pH	su	6.92	6.90	99.7	97.98-102.02	WG502423
Benzene	mg/kg	.025	0.0236	94.4	65-128	WG502296
Ethylbenzene	mg/kg	.025	0.0258	103.	74-128	WG502296
Toluene	mg/kg	.025	0.0249	99.6	70-120	WG502296
Total Xylenes	mg/kg	.075	0.0762	102.	74-127	WG502296
4-Bromofluorobenzene				96.11	59-140	WG502296
Dibromofluoromethane				99.82	63-139	WG502296
Toluene-d8				100.2	84-116	WG502296
a,a,a-Trifluorotoluene				106.8	80-118	WG502296
Mercury	mg/kg	8.77	8.92	102.	71.6-127.7	WG502574

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

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Quality Assurance Report
Level II

L482838

October 18, 2010

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.75	104.	67-135	WG502647
a,a,a-Trifluorotoluene(FID)				104.6	59-128	WG502647
ORP	mV	229	220.	96.1	95.6-104.37	WG502368
Arsenic	mg/kg	192	166.	86.5	78.6-120.8	WG502936
Barium	mg/kg	420	402.	95.7	78.8-121.4	WG502936
Cadmium	mg/kg	70.1	62.4	89.0	78.5-121.5	WG502936
Chromium	mg/kg	168	159.	94.6	80.4-120.2	WG502936
Copper	mg/kg	122	116.	95.1	81.6-119.7	WG502936
Lead	mg/kg	113	103.	91.2	77.3-122.1	WG502936
Nickel	mg/kg	74.1	69.8	94.2	78.8-121.2	WG502936
Selenium	mg/kg	176	166.	94.3	75.6-125.0	WG502936
Silver	mg/kg	115	104.	90.4	66-133.9	WG502936
Zinc	mg/kg	437	398.	91.1	78.5-121.7	WG502936
TPH (GC/FID) High Fraction	ppm	60	50.4	84.0	50-150	WG502959
o-Terphenyl				94.76	50-150	WG502959
Specific Conductance	umhos/cm	406	420.	103.	85-115	WG503224
1-Methylnaphthalene	mg/kg	.033	0.0227	68.7	41-110	WG503513
2-Chloronaphthalene	mg/kg	.033	0.0231	70.0	43-109	WG503513
2-Methylnaphthalene	mg/kg	.033	0.0219	66.2	38-104	WG503513
Acenaphthene	mg/kg	.033	0.0227	68.8	48-103	WG503513
Acenaphthylene	mg/kg	.033	0.0231	69.9	43-106	WG503513
Anthracene	mg/kg	.033	0.0243	73.5	51-110	WG503513
Benzo(a)anthracene	mg/kg	.033	0.0227	68.9	38-126	WG503513
Benzo(a)pyrene	mg/kg	.033	0.0221	67.1	47-118	WG503513
Benzo(b)fluoranthene	mg/kg	.033	0.0222	67.3	47-118	WG503513
Benzo(g,h,i)perylene	mg/kg	.033	0.0245	74.2	40-125	WG503513
Benzo(k)fluoranthene	mg/kg	.033	0.0224	68.0	45-121	WG503513
Chrysene	mg/kg	.033	0.0241	73.0	35-135	WG503513
Dibenz(a,h)anthracene	mg/kg	.033	0.0216	65.6	41-124	WG503513
Fluoranthene	mg/kg	.033	0.0256	77.7	50-114	WG503513
Fluorene	mg/kg	.033	0.0223	67.6	49-109	WG503513
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0235	71.1	40-126	WG503513
Naphthalene	mg/kg	.033	0.0205	62.2	36-100	WG503513
Phenanthrene	mg/kg	.033	0.0234	70.8	46-108	WG503513
Pyrene	mg/kg	.033	0.0231	70.0	30-136	WG503513
2-Fluorobiphenyl				70.17	21-120	WG503513
Nitrobenzene-d5				66.38	33-114	WG503513
p-Terphenyl-d14				78.50	18-142	WG503513

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Chromium,Hexavalent	mg/kg	70.3	69.7	70.0	50-143	0.857	20	WG502351
pH	su	6.90	6.90	100.	97.98-102.02	0	20	WG502423

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Quality Assurance Report
Level II

L482838

October 18, 2010

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	RPD	Limit	Batch
Benzene	mg/kg	0.0212	0.0236	85.0	65-128	10.6	20	WG502296
Ethylbenzene	mg/kg	0.0235	0.0258	94.0	74-128	9.40	20	WG502296
Toluene	mg/kg	0.0226	0.0249	90.0	70-120	9.44	20	WG502296
Total Xylenes	mg/kg	0.0696	0.0762	93.0	74-127	9.01	20	WG502296
4-Bromofluorobenzene				98.76	59-140			WG502296
Dibromofluoromethane				98.32	63-139			WG502296
Toluene-d8				101.6	84-116			WG502296
a,a,a-Trifluorotoluene				105.6	80-118			WG502296
TPH (GC/FID) Low Fraction	mg/kg	5.84	5.75	106.	67-135	1.53	20	WG502647
a,a,a-Trifluorotoluene(FID)				105.8	59-128			WG502647
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG502368
TPH (GC/FID) High Fraction	ppm	52.9	50.4	88.0	50-150	4.79	25	WG502959
o-Terphenyl				102.2	50-150			WG502959
Specific Conductance	umhos/	420.	420.	103.	85-115	0	20	WG503224
1-Methylnaphthalene	mg/kg	0.0191	0.0227	58.0	41-110	17.0	24	WG503513
2-Chloronaphthalene	mg/kg	0.0169	0.0231	51.0	43-109	31.2*	21	WG503513
2-Methylnaphthalene	mg/kg	0.0183	0.0219	55.0	38-104	17.8	24	WG503513
Acenaphthene	mg/kg	0.0192	0.0227	58.0	48-103	16.9	20	WG503513
Acenaphthylene	mg/kg	0.0192	0.0231	58.0	43-106	18.2	20	WG503513
Anthracene	mg/kg	0.0217	0.0243	66.0	51-110	11.2	22	WG503513
Benzo(a)anthracene	mg/kg	0.0209	0.0227	63.0	38-126	8.15	20	WG503513
Benzo(a)pyrene	mg/kg	0.0209	0.0221	63.0	47-118	5.57	20	WG503513
Benzo(b)fluoranthene	mg/kg	0.0221	0.0222	67.0	47-118	0.384	29	WG503513
Benzo(g,h,i)perylene	mg/kg	0.0226	0.0245	68.0	40-125	7.94	20	WG503513
Benzo(k)fluoranthene	mg/kg	0.0203	0.0224	62.0	45-121	9.95	31	WG503513
Chrysene	mg/kg	0.0221	0.0241	67.0	35-135	8.65	20	WG503513
Dibenz(a,h)anthracene	mg/kg	0.0200	0.0216	60.0	41-124	7.97	20	WG503513
Fluoranthene	mg/kg	0.0231	0.0256	70.0	50-114	10.6	20	WG503513
Fluorene	mg/kg	0.0198	0.0223	60.0	49-109	12.1	19	WG503513
Indeno(1,2,3-cd)pyrene	mg/kg	0.0213	0.0235	64.0	40-126	9.62	20	WG503513
Naphthalene	mg/kg	0.0179	0.0205	54.0	36-100	13.6	24	WG503513
Phenanthrene	mg/kg	0.0217	0.0234	66.0	46-108	7.33	21	WG503513
Pyrene	mg/kg	0.0216	0.0231	65.0	30-136	6.72	20	WG503513
2-Fluorobiphenyl				63.52	21-120			WG503513
Nitrobenzene-d5				46.33	33-114			WG503513
p-Terphenyl-d14				68.40	18-142			WG503513

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Chromium,Hexavalent	mg/kg	8.08	0	20	40.4*	50-150	L482572-01	WG502351
Benzene	mg/kg	0.0994	0	.025	79.5	16-143	L482825-01	WG502296
Ethylbenzene	mg/kg	0.108	0	.025	86.6	12-137	L482825-01	WG502296
Toluene	mg/kg	0.105	0	.025	84.0	12-136	L482825-01	WG502296
Total Xylenes	mg/kg	0.324	0	.075	86.4	10-138	L482825-01	WG502296
4-Bromofluorobenzene					97.32	59-140		WG502296
Dibromofluoromethane					99.62	63-139		WG502296

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Level II

L482838

October 18, 2010

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Toluene-d8					102.3	84-116		
a,a,a-Trifluorotoluene					105.9	80-118		
Mercury	mg/kg	0.274	0.0290	.25	98.0	70-130	L482738-19	WG502574
TPH (GC/FID) Low Fraction	mg/kg	25.3	0	5.5	92.0	55-109	L482777-12	WG502647
a,a,a-Trifluorotoluene(FID)					105.7	59-128		WG502647
Arsenic	mg/kg	43.5	3.90	50	79.2	75-125	L482847-31	WG502936
Barium	mg/kg	124.	84.0	50	80.0	75-125	L482847-31	WG502936
Cadmium	mg/kg	40.3	0	50	80.6	75-125	L482847-31	WG502936
Chromium	mg/kg	53.6	10.0	50	87.2	75-125	L482847-31	WG502936
Copper	mg/kg	54.5	11.3	50	86.4	75-125	L482847-31	WG502936
Lead	mg/kg	50.2	8.50	50	83.4	75-125	L482847-31	WG502936
Nickel	mg/kg	53.5	13.4	50	80.2	75-125	L482847-31	WG502936
Selenium	mg/kg	44.3	5.40	50	77.8	75-125	L482847-31	WG502936
Silver	mg/kg	39.7	0	50	79.4	75-125	L482847-31	WG502936
Zinc	mg/kg	84.7	42.0	50	85.4	75-125	L482847-31	WG502936
TPH (GC/FID) High Fraction	ppm	50.5	0	60	84.1	50-150	L482410-02	WG502959
o-Terphenyl					96.80	50-150		WG502959
1-Methylnaphthalene	mg/kg	0.145	0.0430	.033	308.*	19-131	L483743-01	WG503513
2-Chloronaphthalene	mg/kg	0.0281	0	.033	85.1	38-117	L483743-01	WG503513
2-Methylnaphthalene	mg/kg	0.397	0.110	.033	869.*	18-125	L483743-01	WG503513
Acenaphthene	mg/kg	0.0590	0.0100	.033	148.*	31-120	L483743-01	WG503513
Acenaphthylene	mg/kg	0.0296	0	.033	89.7	34-116	L483743-01	WG503513
Anthracene	mg/kg	0.316	0.0280	.033	874.*	32-131	L483743-01	WG503513
Benzo(a)anthracene	mg/kg	0.134	0.0640	.033	211.*	32-131	L483743-01	WG503513
Chrysene	mg/kg	0.186	0.0840	.033	310.*	25-137	L483743-01	WG503513
Fluoranthene	mg/kg	0.253	0.120	.033	403.*	27-138	L483743-01	WG503513
Fluorene	mg/kg	0.103	0.0280	.033	227.*	26-136	L483743-01	WG503513
Naphthalene	mg/kg	0.211	0.0700	.033	427.*	22-121	L483743-01	WG503513
Phenanthrene	mg/kg	0.334	0.140	.033	587.*	27-133	L483743-01	WG503513
Pyrene	mg/kg	0.117	0.0530	.033	194.*	22-133	L483743-01	WG503513
2-Fluorobiphenyl					84.65	21-120		WG503513
Nitrobenzene-d5					55.24	33-114		WG503513
p-Terphenyl-d14					89.37	18-142		WG503513
Benzo(a)pyrene	mg/kg	0.0704	0	.033	213.*	28-130	L483743-01	WG503513
Benzo(b)fluoranthene	mg/kg	0.191	0.0880	.033	312.*	37-130	L483743-01	WG503513
Benzo(g,h,i)perylene	mg/kg	0.0464	0	.033	140.*	10-134	L483743-01	WG503513
Benzo(k)fluoranthene	mg/kg	0.0470	0	.033	142.*	31-129	L483743-01	WG503513
Dibenz(a,h)anthracene	mg/kg	0.0350	0	.033	106.	20-134	L483743-01	WG503513
Indeno(1,2,3-cd)pyrene	mg/kg	0.0464	0	.033	140.*	16-135	L483743-01	WG503513

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Chromium,Hexavalent	mg/kg	8.92	8.08	44.6*	50-150	9.88	20	L482572-01	WG502351
Benzene	mg/kg	0.105	0.0994	83.9	16-143	5.37	31	L482825-01	WG502296
Ethylbenzene	mg/kg	0.117	0.108	93.5	12-137	7.69	36	L482825-01	WG502296
Toluene	mg/kg	0.109	0.105	87.0	12-136	3.56	32	L482825-01	WG502296
Total Xylenes	mg/kg	0.350	0.324	93.3	10-138	7.62	36	L482825-01	WG502296
4-Bromofluorobenzene				100.0	59-140				WG502296

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October 18, 2010

Analyte	Units	Matrix Spike MSD	Matrix Spike Ref	Duplicate %Rec	Limit	RPD	Limit	Ref Samp	Batch
Dibromofluoromethane				99.65	63-139				
Toluene-d8				100.2	84-116				
a,a,a-Trifluorotoluene				104.5	80-118				
Mercury	mg/kg	0.284	0.274	102.	70-130	3.58	20	L482738-19	WG502574
TPH (GC/FID) Low Fraction	mg/kg	22.1	25.3	80.4	55-109	13.5	20	L482777-12	WG502647
a,a,a-Trifluorotoluene(FID)				105.2	59-128				WG502647
Arsenic	mg/kg	48.1	43.5	88.4	75-125	10.0	20	L482847-31	WG502936
Barium	mg/kg	147.	124.	126.*	75-125	17.0	20	L482847-31	WG502936
Cadmium	mg/kg	45.3	40.3	90.6	75-125	11.7	20	L482847-31	WG502936
Chromium	mg/kg	60.4	53.6	101.	75-125	11.9	20	L482847-31	WG502936
Copper	mg/kg	61.8	54.5	101.	75-125	12.6	20	L482847-31	WG502936
Lead	mg/kg	55.3	50.2	93.6	75-125	9.67	20	L482847-31	WG502936
Nickel	mg/kg	60.1	53.5	93.4	75-125	11.6	20	L482847-31	WG502936
Selenium	mg/kg	48.8	44.3	86.8	75-125	9.67	20	L482847-31	WG502936
Silver	mg/kg	44.2	39.7	88.4	75-125	10.7	20	L482847-31	WG502936
Zinc	mg/kg	97.6	84.7	111.	75-125	14.2	20	L482847-31	WG502936
TPH (GC/FID) High Fraction	ppm	46.3	50.5	77.2	50-150	8.52	25	L482410-02	WG502959
o-Terphenyl				83.88	50-150				WG502959
1-Methylnaphthalene	mg/kg	0.111	0.145	205.*	19-131	26.6	30	L483743-01	WG503513
2-Chloronaphthalene	mg/kg	0.0304	0.0281	92.1	38-117	7.94	26	L483743-01	WG503513
2-Methylnaphthalene	mg/kg	0.259	0.397	451.*	18-125	42.0*	29	L483743-01	WG503513
Acenaphthene	mg/kg	0.0535	0.0590	132.*	31-120	9.76	30	L483743-01	WG503513
Acenaphthylene	mg/kg	0.0311	0.0296	94.2	34-116	4.81	29	L483743-01	WG503513
Anthracene	mg/kg	0.0761	0.316	146.*	32-131	122.*	26	L483743-01	WG503513
Benzo(a)anthracene	mg/kg	0.149	0.134	259.*	32-131	11.1	31	L483743-01	WG503513
Chrysene	mg/kg	0.203	0.186	362.*	25-137	8.78	22	L483743-01	WG503513
Fluoranthene	mg/kg	0.271	0.253	457.*	27-138	6.86	35	L483743-01	WG503513
Fluorene	mg/kg	0.0834	0.103	168.*	26-136	21.1	30	L483743-01	WG503513
Naphthalene	mg/kg	0.161	0.211	275.*	22-121	27.1	30	L483743-01	WG503513
Phenanthrene	mg/kg	0.288	0.334	449.*	27-133	14.6	36	L483743-01	WG503513
Pyrene	mg/kg	0.132	0.117	240.*	22-133	12.1	33	L483743-01	WG503513
2-Fluorobiphenyl				89.28	21-120				WG503513
Nitrobenzene-d5				129.8*	33-114				WG503513
p-Terphenyl-d14				90.62	18-142				WG503513
Benzo(a)pyrene	mg/kg	0.0984	0.0704	298.*	28-130	33.2*	28	L483743-01	WG503513
Benzo(b)fluoranthene	mg/kg	0.259	0.191	519.*	37-130	30.2	41	L483743-01	WG503513
Benzo(g,h,i)perylene	mg/kg	0.0655	0.0464	198.*	10-134	34.2*	26	L483743-01	WG503513
Benzo(k)fluoranthene	mg/kg	0.0940	0.0470	285.*	31-129	66.6*	42	L483743-01	WG503513
Dibenz(a,h)anthracene	mg/kg	0.0469	0.0350	142.*	20-134	28.9*	25	L483743-01	WG503513
Indeno(1,2,3-cd)pyrene	mg/kg	0.0657	0.0464	199.*	16-135	34.4*	26	L483743-01	WG503513

Batch number /Run number / Sample number cross reference

WG502351: R1419648: L482838-01
WG502423: R1420749: L482838-01
WG502296: R1421148: L482838-01
WG502574: R1421569: L482838-01
WG502647: R1422208: L482838-01
WG502368: R1422548: L482838-01
WG502936: R1426376: L482838-01

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Level II

L482838

October 18, 2010

WG502959: R1426549: L482838-01
WG503224: R1427548: L482838-01
WG502875: R1427568: L482838-01
WG503513: R1429988: L482838-01

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

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

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

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

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Report Summary

Tuesday April 19, 2011

Report Number: L511470
Samples Received: 04/15/11
Client Project: 900133.8887.030

Description: P16OU

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

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
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.

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

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REPORT OF ANALYSIS

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

April 19, 2011

ESC Sample # : L511470-01

Site ID : EOU

Project # : 900133.8887.030

Date Received : April 15, 2011
Description : P16OU

Sample ID : P16OU-CUT-041411

Collected By : Bob Stockton
Collection Date : 04/14/11 14:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	78.		%	2540G	04/19/11	1
TPH (GC/FID) Low Fraction	0.64	0.50	mg/kg	8015D/GRO	04/15/11	5
Surrogate Recovery (70-130)						
a,a,a-Trifluorotoluene(FID)	96.3		% Rec.	602/8015	04/15/11	5
TPH (GC/FID) High Fraction	1100	80.	mg/kg	3546/DRO	04/18/11	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	04/18/11	20

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 04/19/11 12:59 Printed: 04/19/11 13:00

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L511470-01	WG531290	SAMP	o-Terphenyl	R1653449	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

Qualifier Report Information

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Definitions

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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
04/19/11 at 13:00:06

TSR Signing Reports: 358
R3 - Rush: Two Day

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. TPH=GRO and DRO ALWAYS

Sample: L511470-01 Account: ENCANACO Received: 04/15/11 09:00 Due Date: 04/19/11 00:00 RPT Date: 04/19/11 12:59

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

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Est. 1970

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

Quality Assurance Report
Level II

April 19, 2011

L511470

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG531233	04/15/11 14:44
a,a,a-Trifluorotoluene(FID)		% Rec.	98.07	59-128	WG531233	04/15/11 14:44
TPH (GC/FID) High Fraction	< 4	ppm			WG531290	04/17/11 08:53
o-Terphenyl		% Rec.	65.70	50-150	WG531290	04/17/11 08:53
Total Solids	< .1	%			WG531494	04/19/11 12:03

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Total Solids	%	83.0	82.3	0.919	5	L511564-03	WG531494

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.38	97.9	67-135	WG531233
a,a,a-Trifluorotoluene(FID)				104.3	59-128	WG531233
TPH (GC/FID) High Fraction	ppm	60	34.5	57.5	50-150	WG531290
o-Terphenyl				58.98	50-150	WG531290
Total Solids	%	50	50.0	100.	85-155	WG531494

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	5.40	5.38	98.0	67-135	0.220	20	WG531233
a,a,a-Trifluorotoluene(FID)				104.0	59-128			WG531233
TPH (GC/FID) High Fraction	ppm	36.5	34.5	61.0	50-150	5.62	25	WG531290
o-Terphenyl				59.95	50-150			WG531290

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
TPH (GC/FID) Low Fraction	mg/kg	22.1	0	5.5	80.5	55-109	L511353-01	WG531233
a,a,a-Trifluorotoluene(FID)					102.7	59-128		WG531233
TPH (GC/FID) High Fraction	ppm	35.7	0	60	59.4	50-150	L511547-14	WG531290
o-Terphenyl					59.12	50-150		WG531290

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
TPH (GC/FID) Low Fraction	mg/kg	17.9	22.1	65.2	55-109	20.9*	20	L511353-01	WG531233
a,a,a-Trifluorotoluene(FID)				99.35	59-128				WG531233
TPH (GC/FID) High Fraction	ppm	43.1	35.7	71.9	50-150	19.0	25	L511547-14	WG531290
o-Terphenyl				57.96	50-150				WG531290

* Performance of this Analyte is outside of established criteria.
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Mt. Juliet, TN 37122
(615) 758-5858
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Quality Assurance Report
Level II

L511470

April 19, 2011

Batch number /Run number / Sample number cross reference

WG531233: R1652389: L511470-01
WG531290: R1653449: L511470-01
WG531494: R1655833: L511470-01

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Parachute, CO 81635

Quality Assurance Report
Level II

L511470

April 19, 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.

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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

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

Report Summary

Wednesday July 06, 2011

Report Number: L523959
Samples Received: 07/01/11
Client Project:

Description: P16OU-Cuttings

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

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
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.

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

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REPORT OF ANALYSIS

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

July 06, 2011

ESC Sample # : L523959-01

Date Received : July 01, 2011
Description : P16OU-Cuttings

Site ID : P16OU

Sample ID : P16OU-CUT-062811 4-16IN

Project # :

Collected By : Brennen Graff
Collection Date : 06/28/11 15:10

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	12.	5.0	mg/kg	8015D/GRO	07/01/11	50
Surrogate Recovery (70-130)						
a,a,a-Trifluorotoluene(FID)	102.		% Rec.	602/8015	07/01/11	50
TPH (GC/FID) High Fraction	1000	80.	mg/kg	3546/DRO	07/05/11	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	07/05/11	20

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 07/06/11 10:08 Printed: 07/06/11 10:53

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L523959-01	WG543793	SAMP	o-Terphenyl	R1750069	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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Chris Hines
2717 County Road 215, Suite 100
Parachute, CO 81635

Quality Assurance Report
Level II

L523959

July 06, 2011

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG543739	07/01/11 17:17
a,a,a-Trifluorotoluene(FID)		% Rec.	104.4	59-128	WG543739	07/01/11 17:17
TPH (GC/FID) High Fraction	< 4	ppm			WG543793	07/05/11 10:34
o-Terphenyl		% Rec.	72.82	50-150	WG543793	07/05/11 10:34

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.01	109.	67-135	WG543739
a,a,a-Trifluorotoluene(FID)				110.4	59-128	WG543739
TPH (GC/FID) High Fraction	ppm	60	47.0	78.3	50-150	WG543793
o-Terphenyl				69.02	50-150	WG543793

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	6.11	6.01	111.	67-135	1.63	20	WG543739
a,a,a-Trifluorotoluene(FID)				111.2	59-128			WG543739
TPH (GC/FID) High Fraction	ppm	47.8	47.0	80.0	50-150	1.79	25	WG543793
o-Terphenyl				71.59	50-150			WG543793

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
TPH (GC/FID) Low Fraction	mg/kg	14.7	1.50	5.5	47.9*	55-109	L523945-01	WG543739
a,a,a-Trifluorotoluene(FID)					101.0	59-128		WG543739
TPH (GC/FID) High Fraction	ppm	42.4	7.90	60	57.4	50-150	L523369-01	WG543793
o-Terphenyl					67.30	50-150		WG543793

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
TPH (GC/FID) Low Fraction	mg/kg	15.1	14.7	49.4*	55-109	2.84	20	L523945-01	WG543739
a,a,a-Trifluorotoluene(FID)				101.6	59-128				WG543739
TPH (GC/FID) High Fraction	ppm	42.7	42.4	58.1	50-150	0.882	25	L523369-01	WG543793
o-Terphenyl				69.00	50-150				WG543793

Batch number /Run number / Sample number cross reference

WG543739: R1748929: L523959-01
WG543793: R1750069: L523959-01

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

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Quality Assurance Report
Level II

L523959

July 06, 2011

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

Report Summary

Wednesday August 03, 2011

Report Number: L528003
Samples Received: 07/27/11
Client Project:

Description: P16OU-Cuttings

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

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
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REPORT OF ANALYSIS

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

August 03, 2011

ESC Sample # : L528003-01

Date Received : July 27, 2011
Description : P16OU-Cuttings

Site ID : P16OU

Sample ID : P16OU-CUT-072511

Project # :

Collected By : Brennan Graff
Collection Date : 07/25/11 10:28

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	07/28/11	5
Surrogate Recovery (70-130)						
a,a,a-Trifluorotoluene(FID)	103.		% Rec.	602/8015	07/28/11	5
TPH (GC/FID) High Fraction	820	80.	mg/kg	3546/DRO	08/03/11	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	08/03/11	20

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Reported: 08/03/11 17:29 Printed: 08/03/11 18:23

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L528003-01	WG548011	SAMP	o-Terphenyl	R1801733	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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Chris Hines / Jake Harris
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Parachute, CO 81635

Quality Assurance Report
Level II

L528003

August 03, 2011

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG547722	07/28/11 03:03
a,a,a-Trifluorotoluene(FID)		% Rec.	102.1	59-128	WG547722	07/28/11 03:03
TPH (GC/FID) High Fraction	< 4	ppm			WG548011	08/03/11 09:34
o-Terphenyl		% Rec.	73.03	50-150	WG548011	08/03/11 09:34

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.40	98.2	67-135	WG547722
a,a,a-Trifluorotoluene(FID)				98.91	59-128	WG547722
TPH (GC/FID) High Fraction	ppm	60	50.7	84.6	50-150	WG548011
o-Terphenyl				62.52	50-150	WG548011

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) Low Fraction	mg/kg	5.95	5.40	108.	67-135	9.73	20	WG547722
a,a,a-Trifluorotoluene(FID)				98.82	59-128			WG547722
TPH (GC/FID) High Fraction	ppm	47.5	50.7	79.0	50-150	6.53	25	WG548011
o-Terphenyl				60.93	50-150			WG548011

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
TPH (GC/FID) Low Fraction	mg/kg	3.83	0.0781	5.5	68.2	55-109	L527883-02	WG547722
a,a,a-Trifluorotoluene(FID)					98.67	59-128		WG547722
TPH (GC/FID) High Fraction	ppm	140.	100.	60	66.8	50-150	L528053-10	WG548011
o-Terphenyl					73.07	50-150		WG548011

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
TPH (GC/FID) Low Fraction	mg/kg	4.29	3.83	76.6	55-109	11.3	20	L527883-02	WG547722
a,a,a-Trifluorotoluene(FID)				99.74	59-128				WG547722
TPH (GC/FID) High Fraction	ppm	185.	140.	141.	50-150	27.5*	25	L528053-10	WG548011
o-Terphenyl				83.21	50-150				WG548011

Batch number /Run number / Sample number cross reference

WG547722: R1789650: L528003-01
WG548011: R1801733: L528003-01

* * Calculations are performed prior to rounding of reported values.
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Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines / Jake Harris
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L528003

August 03, 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.

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

Report Summary

Thursday December 15, 2011

Report Number: L551240
Samples Received: 12/13/11
Client Project:

Description: P16OU-Cuttings

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

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915, PA - 68-02979

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.

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

ESC
L·A·B S·C·I·E·N·C·E·S
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REPORT OF ANALYSIS

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

December 15, 2011

ESC Sample # : L551240-01

Date Received : December 13, 2011
Description : P16OU-Cuttings

Site ID : P16OU

Sample ID : P16OU-CUT-121211

Project # :

Collected By : Brennen G.
Collection Date : 12/12/11 10:37

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	12/14/11	5
Surrogate Recovery (70-130)						
a,a,a-Trifluorotoluene(FID)	102.		% Rec.	602/8015	12/14/11	5
TPH (GC/FID) High Fraction	390	4.0	mg/kg	3546/DRO	12/13/11	1
Surrogate recovery(%)						
o-Terphenyl	111.		% Rec.	3546/DRO	12/13/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 12/15/11 13:38 Printed: 12/15/11 13:38

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L551240-01	WG569759	SAMP	TPH (GC/FID) High Fraction	R1965575	J3V

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

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 Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography 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
12/15/11 at 13:38:49

TSR Signing Reports: 358
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution.

Sample: L551240-01 Account: ENCANACO Received: 12/13/11 09:00 Due Date: 12/20/11 00:00 RPT Date: 12/15/11 13:38

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Quality Assurance Report
Level II

L551240

December 15, 2011

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) High Fraction	< 4	ppm			WG569759	12/13/11 16:13
o-Terphenyl		% Rec.	75.71	50-150	WG569759	12/13/11 16:13
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG569869	12/14/11 02:05
a,a,a-Trifluorotoluene(FID)		% Rec.	104.3	59-128	WG569869	12/14/11 02:05

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) High Fraction	ppm	60	44.3	73.8	50-150	WG569759
o-Terphenyl				91.53	50-150	WG569759
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.64	102.	67-135	WG569869
a,a,a-Trifluorotoluene(FID)				109.4	59-128	WG569869

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) High Fraction	ppm	45.8	44.3	76.0	50-150	3.44	25	WG569759
o-Terphenyl				91.21	50-150			WG569759
TPH (GC/FID) Low Fraction	mg/kg	6.08	5.64	110.	67-135	7.53	20	WG569869
a,a,a-Trifluorotoluene(FID)				109.1	59-128			WG569869

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
TPH (GC/FID) High Fraction	ppm	355.	390.	60	0*	50-150	L551240-01	WG569759
o-Terphenyl					91.30	50-150		WG569759
TPH (GC/FID) Low Fraction	mg/kg	25.3	0	5.5	92.1	55-109	L551216-12	WG569869
a,a,a-Trifluorotoluene(FID)					107.6	59-128		WG569869

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
TPH (GC/FID) High Fraction	ppm	454.	355.	106.	50-150	24.4	25	L551240-01	WG569759
o-Terphenyl				126.6	50-150				WG569759
TPH (GC/FID) Low Fraction	mg/kg	25.2	25.3	91.5	55-109	0.630	20	L551216-12	WG569869
a,a,a-Trifluorotoluene(FID)				106.9	59-128				WG569869

Batch number /Run number / Sample number cross reference

WG569759: R1965575: L551240-01
WG569869: R1967413: L551240-01

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

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