



**C28 696 (Location: 335200)**  
**Pit (Facility: 425557)**  
**Encana Oil & Gas (USA) Inc. (Operator: 100185)**

**REPORT OF WORK COMPLETED**

- Form 27 (Doc: 2232902) (Rem: 7748)
- Form 4 – Project Update (Doc: 400814768)

Encana Oil & Gas (USA) Inc. (Encana) is submitting this Form 4 to document in-situ characterization efforts and to request approval for a proposed remediation system installation.

A Form 4 was submitted on March 25, 2015 to provide a project update and notice of intent to carry out in-situ characterization efforts in support of pit closure efforts on a well pad in the North Parachute area of operation in Garfield County.

In-situ characterization efforts were carried out between March 25 and April 1, 2015. The environmental contractor used field screening with a photo ionizing detector (PID) and a hydrocarbon field screening test kit (Petroflag) to identify potential subsurface impacts. Where potential impacts were identified, wells were installed to support in-situ remediation if necessary. Field screening efforts for impacts and clearance were confirmed with samples collected and submitted to a laboratory for analysis of the previously identified constituents of concern. See the attached contractor activity report for additional information.

Laboratory results identified organic constituents (TPH, benzene, PAH) concentrations above the allowable limits in COGCC Table 910-1 in five of 18 soil boring locations. Two of the five soil borings with organic concentration above allowable limits, were above on only one PAH constituent (Benzo(A)pyrene).

Analytical results are provided in the attached summary table and laboratory reports. A site diagram is also provided to illustrate the location of soil borings where organic constituent impacts were identified.

This location and pit excavation occurs below the Green River Formation in fractured shale alluvium. The formation is known for lacustrine fossil beds and oil shale, among other lithology. Lacustrine and marine fossil beds are commonly associated with high background arsenic concentrations, while oil shale is known for elevated levels of heavy end organics, including TPH-DRO and PAH constituents. Encana has collected background samples throughout much of the Piceance with elevated background levels of arsenic, TPH-DRO, and PAH constituents.

## **REMEDIATION PROPOSAL**

Encana proposes to install wind-powered ventilator turbines on the three wells installed in the soil borings with TPH and benzene concentrations above allowable limits. These wells would be added to an existing monthly operations and maintenance (O&M) schedule to collect data on subsurface activity. When data indicates that an endpoint in the remediation has been achieved, a soil auger rig will be scheduled to collect clearance samples for laboratory analysis.

PAH constituent concentrations identified in four of the 18 soil borings on this location were above the allowable concentrations in Table 910-1, however these samples were collected from fractured shale alluvium originating from the Green River Formation, which outcrops above the location. The presence of heavy-end organic (TPH-DRO and PAH) background concentrations is common in the Green River Formation. Heavy-end organic compounds are not readily soluble in water and are typically entrained in soil and shale. Based on the stability of heavy-end organic constituents, the naturally occurring geologic conditions, and Footnote 1 to COGCC Table 910-1, Encana requests the COGCC consider the PAH present in these soil borings as consistent with background in the area.

With approval of this proposed remediation approach, Encana will install ventilator turbines on the three wells (SVEW02N, SVEMID01, SVESE01) with elevated TPH and benzene concentrations. The remaining three wells, two with PAH concentrations above allowable limits, will be removed. The attached site diagram illustrates the location of the wells referenced here.

A Notification of Completion for this project will be submitted when clearance samples are received following a characterization event.

## **ATTACHMENTS**

1. Topographic Location Map
2. Contractor Characterization Report and Site Diagram
3. Laboratory Results Summary Table
4. Laboratory Reports

# North Parachute Ranch

Garfield County, Colorado

0 3,200 6,400 Feet

1 inch = 3,000 feet

T006S-R096W

C28MF Storage Pit  
Facility ID - 425557

C28MF

T007S-R096W

- Encana Site Boundary
- Access Road
- Township Boundary
- Surface Ownership**
- Not Identified Below (clear)
- EnCana (transparent)
- USFS (transparent)
- BLM (transparent)



April 21, 2015

Mr. Chris Hines  
Environmental Specialist  
Encana Oil & Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, Colorado 81635

**RE: Report of Work Completed – Historical Pit Closure (Facility ID – 425557)  
C28 696 (Location ID – 335200, REM – 7748)  
Garfield County, Colorado**

Dear Mr. Hines:

LT Environmental, Inc. (LTE), under the direction of Encana Oil and Gas, Inc. (Encana), conducted site assessment activities associated with pit closure at the C28 696 (Site), located within the Grand Valley area of operation in Garfield County, Colorado. This correspondence is a summary of the work completed by LTE in March, 2015.

### **Site Assessment Activities**

On March 25, 2015, through April 1, 2015, LTE advanced 18 soil borings at depths ranging from 17 to 42 feet below ground surface associated with a historical pit location at the Site. Six of the soil borings were converted to soil vapor extraction wells (SVE) to remediate residual hydrocarbon impacts. Soil confirmation samples were collected from each soil boring and submitted for laboratory analysis of constituents identified in Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1. The attached Site Diagram illustrates soil boring locations.

### **Analytical Results and Remediation**

Laboratory analytical results indicate concentrations of total petroleum hydrocarbons, benzene, benzo(b)fluoranthene, benzo(a)pyrene, and dibenzo(a,h)anthracene exceeding the COGCC Table 910-1 concentration levels. Laboratory analytical reports are included as an attachment and summarized in the attached Laboratory Results Summary Table. Additionally, the above-mentioned exceedances are illustrated on the Site Diagram.

Ventilator turbines will be secured to the top of SVE wells SVEW02, SVEMID01, SVESE01 and PITSVESE01 for the purpose of remediating residual hydrocarbon concentrations. The SVE system is designed to volatilize petroleum constituents adsorbed onto soil particles and promote bio-attenuation of residual hydrocarbons.

Monthly measurements of flow, temperature, and gas concentrations will be collected at each SVE well. As gas concentrations stabilize, LTE will evaluate collected data and provide confirmation soil sampling recommendations with the goal of achieving site closure.



LTE appreciates the opportunity to provide environmental services to Encana. Please call us at 970-285-9985 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read 'Chris McKisson', written in a cursive style.

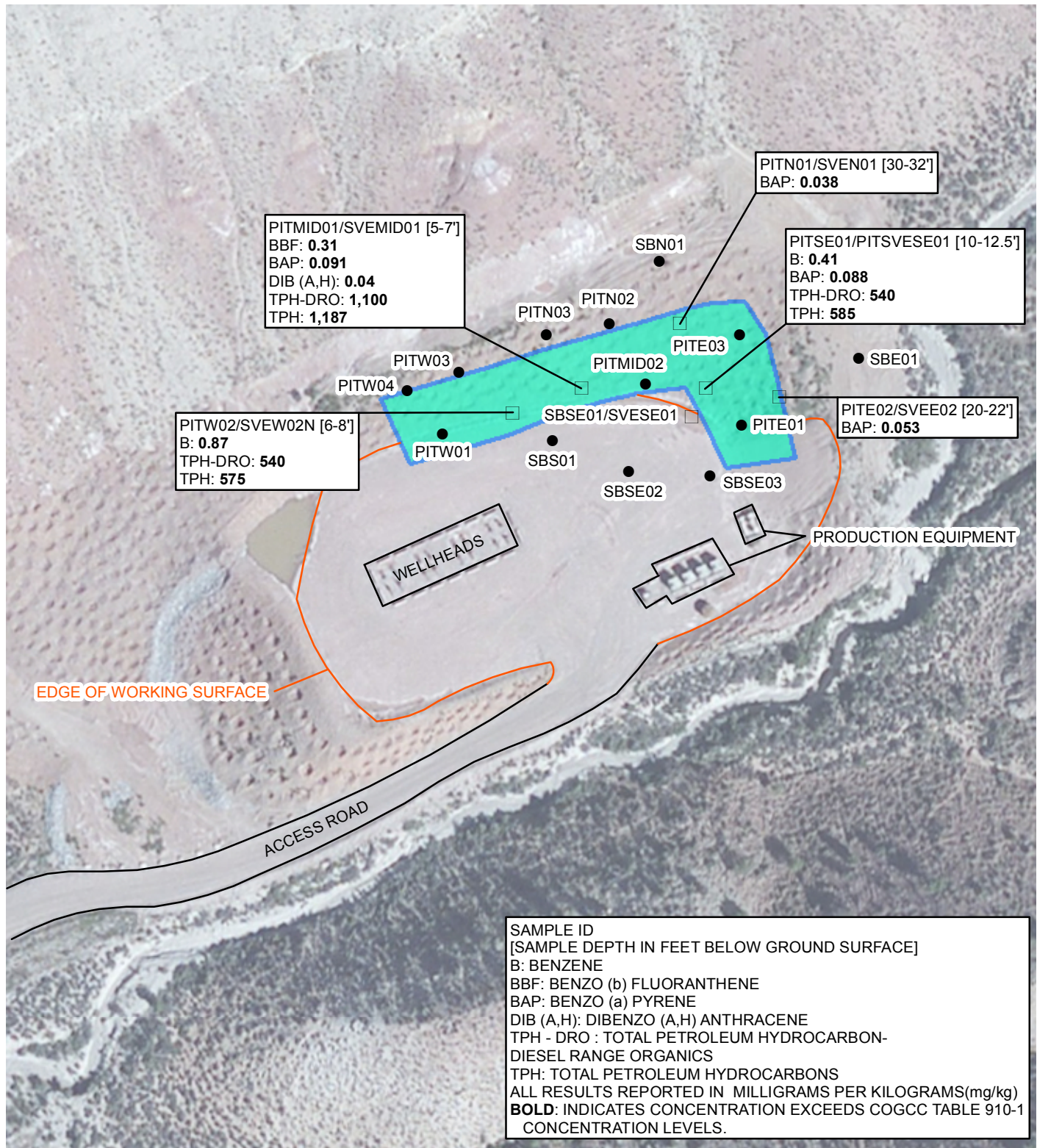
Chris McKisson  
Project Manager

A handwritten signature in black ink, appearing to read 'Robert Fishburn', written in a cursive style.

Robert Fishburn, P.G  
Senior Hydrogeologist

Attachments

Site Diagram  
Laboratory Results Summary Table  
Laboratory Analytical Report



PITMID01/SVEMID01 [5-7']  
 BBF: **0.31**  
 BAP: **0.091**  
 DIB (A,H): **0.04**  
 TPH-DRO: **1,100**  
 TPH: **1,187**

PITN01/SVEN01 [30-32']  
 BAP: **0.038**

PITSE01/PITSVSE01 [10-12.5']  
 B: **0.41**  
 BAP: **0.088**  
 TPH-DRO: **540**  
 TPH: **585**

PITW02/SVEW02N [6-8']  
 B: **0.87**  
 TPH-DRO: **540**  
 TPH: **575**

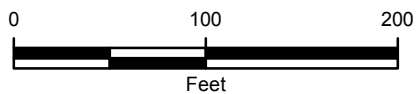
PITE02/SVEE02 [20-22']  
 BAP: **0.053**

SAMPLE ID  
 [SAMPLE DEPTH IN FEET BELOW GROUND SURFACE]  
 B: BENZENE  
 BBF: BENZO (b) FLUORANTHENE  
 BAP: BENZO (a) PYRENE  
 DIB (A,H): DIBENZO (A,H) ANTHRACENE  
 TPH - DRO : TOTAL PETROLEUM HYDROCARBON-  
 DIESEL RANGE ORGANICS  
 TPH: TOTAL PETROLEUM HYDROCARBONS  
 ALL RESULTS REPORTED IN MILLIGRAMS PER KILOGRAMS(mg/kg)  
**BOLD**: INDICATES CONCENTRATION EXCEEDS COGCC TABLE 910-1  
 CONCENTRATION LEVELS.

**LEGEND**

- SOIL VAPOR EXTRACTION WELL (SVE)
- SOIL BORING
- PIT OUTLINE

IMAGE COURTESY OF ESRI



SITE DIAGRAM  
 C28 PAD  
 GARFIELD COUNTY, COLORADO

**ENCANA OIL & GAS (USA) INC.**



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

Location	Sample Date:	Sample Matrix	Matrix Notes	Organic Compounds in Soil (mg/kg [ppm])																			Inorganics in Soil			Metals in Soil (mg/kg [ppm])															
				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						
				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	Dibenz(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-C,D)pyrene	Naphthalene	Pyrene	EC (<4 mmhos/cm or 2x background)	SR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nickel (soluble salts)	Selenium	Silver	Zinc			
C28MF	10/15/09	Pit	pit bottom	74.7	10.4	64.3	0.001	ND	ND	ND	ND	0.0254	0.271	0.567	0.11	0.14	0.329	0.0525	0.286	38.2	0.11	0.017	0.209	2.51	35.5	9.1	5.7		0.22	10.7	1.5	13.3	11.4	0.11	17.4	0.14	0.22	56			
C28MF	10/19/09	Pit	pit bottom	896.3	17.3	879	ND	0.0028	ND	ND	ND	0.0129	0.123	0.195	0.04	0.0548	0.156	0.0313	0.174	0.137	0.058	0.355	0.0679	2.53	29.6	8.9	5.7		0.97	15.4	1.3	15.3	12.2	0.037	17.6	0.15	0.21	61.9			
C28MF	10/28/09	Pit	pit bottom	13.45	2.05	11.4	0.001	0.0012	ND	ND	ND	0.0041	0.0193	0.0335	0.01	0.0061	0.0167	ND	0.0404	ND	ND	0.016	0.0093	1.71	30.5	9.4	4		0.06	14.6	1.2	9.6	10.3	0.0007	18.6	0.15	0.21	68.9			
C28MF	10/28/09	Pit	pit spoil	420	144	276	0.393	0.686	0.244	3.98	ND	0.0067	0.0791	0.127	0.03	0.0394	0.1	0.0139	0.11	0.024	0.034	0.034	0.0464	2.19	35.4	8.1	7.1		0.4	16.3	1.3	16.9	12.9	0.054	19.9	0.15	0.24	67.3			
C28MF	03/25/15	Pit	PITW01 [5-7]	14	U	14	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/26/15	Pit	PITW01 [30-32]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/26/15	Pit	PITW02 [6-8]	575	35	540	0.87	1.3	0.077	0.78	U	U	U	U	U	U	U	U	U	U	U	U	0.22	U																	
C28MF	03/26/15	Pit	PITW02 [20-22]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/26/15	Pit	PITMID02 [10-12]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/26/15	Pit	PITMID02 [20-22]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/26/15	Pit	PITMID01 [5-7]	1187	87	1100	0.15	0.17	0.028	0.57	U	0.049	0.18	0.31	0.071	0.091	0.24	0.04	0.3	0.084	0.12	0.19	0.28																		
C28MF	03/26/15	Pit	PITMID01 [20-22]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/27/15	Pit	PITE01 [25-27]	10	U	10	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				7.6														
C28MF	03/27/15	Pit	PITE02 [10-12]	28	U	28	U	0.02	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/27/15	Pit	PITE02 [20-22]	9.2	U	9.2	U	U	U	U	U	U	0.062	0.072	0.024	0.053	0.066	U	0.12	U	0.039	U	0.12				7.3														
C28MF	03/27/15	Pit	PITE03 [30-32]	6	U	6	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				4.9														
C28MF	03/27/15	Pit	PITN01 [30-32]	74	U	74	U	U	U	U	U	0.0071	0.047	0.055	0.021	0.038	0.058	U	0.10	0.022	0.023	U	0.066																		
C28MF	03/30/15	Pit	PITN02 [25-32]	13	U	13	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/30/15	Pit	PITN03 [15-17]	17	U	17	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/30/15	Pit	PITW03 [23-25]	6.2	U	6.2	U	U	U	U	U	U	U	U	U	U	U	U	U	0.0059	U	U	U																		
C28MF	03/30/15	Pit	PITW04 [15-17]	8.3	U	8.3	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/30/15	Pit	PITW04 [20-22]	6.7	U	6.7	U	U	U	U	U	U	U	U	U	U	U	U	U	0.0063	U	U	U																		
C28MF	03/30/15	Pit	PITSE01 [10-12.5]	585	45	540	0.41	0.036	0.071	0.31	U	0.02	0.13	0.22	0.077	0.088	0.14	U	0.17	0.097	0.12	0.21	0.10																		
C28MF	03/31/15	Pit	PITSE01 [25-27.5]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/31/15	Pit	SBSE01 [15-17]	135	25	110	U	U	U	U	U	U	U	U	U	U	U	U	0.0061	U	U	0.092	U																		
C28MF	03/31/15	Pit	SBSE01 [25-27]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U																		
C28MF	03/31/15	Pit	SBS01 [25-27]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				8.2														
C28MF	03/31/15	Pit	SBE01 [40-42]	10	U	10	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				9.7														
C28MF	04/01/15	Pit	SBN01 [25-27]	11	U	11	U	0.016	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				5.9														
C28MF	04/01/15	Pit	SBSE02 [25-27]	U	U	U	U	0.013	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				9.4														
C28MF	04/01/15	Pit	SBSE03 [25-27]	9.6	U	9.6	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				11														



06-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28 Pit Assessment**

Work Order: **15031650**

Dear Christopher,

ALS Environmental received 1 sample on 27-Mar-2015 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

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**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Work Order:** 15031650

**Work Order Sample Summary**

---

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
15031650-04	PITW01 C28 5-7'	Soil		3/25/2015 15:20	3/27/2015 09:30	<input type="checkbox"/>

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**WorkOrder:** 15031650

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

# ALS Group USA, Corp

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** PITW01 C28 5-7'  
**Collection Date:** 3/25/2015 03:20 PM

**Work Order:** 15031650  
**Lab ID:** 15031650-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 3/30/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>14</b>		<b>1.4</b>	<b>4.4</b>	<b>mg/Kg-dry</b>	1	3/31/2015 23:07
Surr: 4-Terphenyl-d14	63.8			39-133	%REC	1	3/31/2015 23:07
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	3/31/2015 23:20
Surr: Toluene-d8	121			50-150	%REC	1	3/31/2015 23:20
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/1/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Anthracene	U		0.0034	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Benzo(a)anthracene	U		0.0043	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Benzo(a)pyrene	U		0.0015	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Benzo(b)fluoranthene	U		0.0024	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Benzo(k)fluoranthene	U		0.0044	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Chrysene	U		0.0059	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Dibenzo(a,h)anthracene	U		0.0023	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Fluoranthene	U		0.0043	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Fluorene	U		0.0039	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Indeno(1,2,3-cd)pyrene	U		0.0044	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Naphthalene	U		0.0018	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Pyrene	U		0.0053	0.0070	mg/Kg-dry	1	4/2/2015 07:25
Surr: 2-Fluorobiphenyl	63.4			12-100	%REC	1	4/2/2015 07:25
Surr: 4-Terphenyl-d14	78.8			25-137	%REC	1	4/2/2015 07:25
Surr: Nitrobenzene-d5	60.3			37-107	%REC	1	4/2/2015 07:25
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15	Analyst: <b>LSY</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/4/2015 02:21
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/4/2015 02:21
m,p-Xylene	U		0.024	0.064	mg/Kg-dry	1	4/4/2015 02:21
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/4/2015 02:21
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/4/2015 02:21
Xylenes, Total	U		0.038	0.096	mg/Kg-dry	1	4/4/2015 02:21
Surr: 1,2-Dichloroethane-d4	111			70-130	%REC	1	4/4/2015 02:21
Surr: 4-Bromofluorobenzene	95.6			70-130	%REC	1	4/4/2015 02:21
Surr: Dibromofluoromethane	91.7			70-130	%REC	1	4/4/2015 02:21
Surr: Toluene-d8	95.0			70-130	%REC	1	4/4/2015 02:21
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>6.0</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/1/2015 15:05

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 15031650  
**Project:** C28 Pit Assessment

**QC BATCH REPORT**

Batch ID: **69205** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: <b>DBLKS1-69205-69205</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>3/31/2015 10:06 AM</b>		
Client ID:		Run ID: <b>GC8_150331A</b>		SeqNo: <b>3203681</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.557	0	2	0	77.8	39-133	0			

LCS		Sample ID: <b>DLCSS1-69205-69205</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>3/31/2015 10:36 AM</b>		
Client ID:		Run ID: <b>GC8_150331A</b>		SeqNo: <b>3203682</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	173.2	5.0	200	0	86.6	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.278	0	2	0	63.9	39-133	0			

MS		Sample ID: <b>15031629-01A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>3/31/2015 11:07 AM</b>		
Client ID:		Run ID: <b>GC8_150331A</b>		SeqNo: <b>3203683</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	305.5	8.3	331	0	92.3	48-110	0			
<i>Surr: 4-Terphenyl-d14</i>	2.228	0	3.31	0	67.3	39-133	0			

MSD		Sample ID: <b>15031629-01A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>3/31/2015 11:36 AM</b>		
Client ID:		Run ID: <b>GC8_150331A</b>		SeqNo: <b>3203684</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	270.9	7.8	312.8	0	86.6	48-110	305.5	12	30	
<i>Surr: 4-Terphenyl-d14</i>	1.983	0	3.128	0	63.4	39-133	2.228	11.7	30	

The following samples were analyzed in this batch:

15031650-04A
--------------

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031650  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69203** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69203-69203</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 12:19 PM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3201868</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5173	0	5000	0	103	50-150	0			

LCS		Sample ID: <b>LCS-69203-69203</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 11:54 AM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3201867</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	420800	2,500	500000	0	84.2	70-130	0			
<i>Surr: Toluene-d8</i>	4405	0	5000	0	88.1	50-150	0			

MS		Sample ID: <b>15031352-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 10:12 PM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3202054</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1866000	10,000	2092000	0	89.2	70-130	0			
<i>Surr: Toluene-d8</i>	19090	0	20920	0	91.3	50-150	0			

MSD		Sample ID: <b>15031352-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 10:37 PM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3202056</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1794000	10,000	2092000	0	85.8	70-130	1866000	3.91	30	
<i>Surr: Toluene-d8</i>	18520	0	20920	0	88.5	50-150	19090	3.05	30	

The following samples were analyzed in this batch:

15031650-04A
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Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031650  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69302** Instrument ID **SVMS4** Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-69302-69302</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/1/2015 11:43 PM</b>		
Client ID:		Run ID: <b>SVMS4_150401B</b>		SeqNo: <b>3206591</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
<i>Surr: 2-Fluorobiphenyl</i>	1170	0	1667	0	70.2	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1945	0	1667	0	117	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1152	0	1667	0	69.1	37-107	0			

LCS		Sample ID: <b>SLCSS1-69302-69302</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 12:11 PM</b>		
Client ID:		Run ID: <b>SVMS4_150401B</b>		SeqNo: <b>3206624</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	441.3	6.7	666.7	0	66.2	45-110	0			
Anthracene	533.3	6.7	666.7	0	80	55-105	0			
Benzo(a)anthracene	533	6.7	666.7	0	79.9	50-110	0			
Benzo(a)pyrene	546.7	6.7	666.7	0	82	50-110	0			
Benzo(b)fluoranthene	538.3	6.7	666.7	0	80.7	45-115	0			
Benzo(k)fluoranthene	524	6.7	666.7	0	78.6	45-115	0			
Chrysene	529	6.7	666.7	0	79.3	55-110	0			
Dibenzo(a,h)anthracene	553.3	6.7	666.7	0	83	40-125	0			
Fluoranthene	513.3	6.7	666.7	0	77	55-115	0			
Fluorene	488	6.7	666.7	0	73.2	50-110	0			
Indeno(1,2,3-cd)pyrene	570.3	6.7	666.7	0	85.5	40-120	0			
Naphthalene	450.7	6.7	666.7	0	67.6	40-105	0			
Pyrene	626.7	6.7	666.7	0	94	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1171	0	1667	0	70.3	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1694	0	1667	0	102	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1213	0	1667	0	72.8	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031650  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69302** Instrument ID **SVMS4** Method: **SW846 8270D**

MS				Sample ID: 15031672-03B MS			Units: µg/Kg		Analysis Date: 4/2/2015 01:45 AM		
Client ID:		Run ID: SVMS4_150401B		SeqNo: 3206593		Prep Date: 4/1/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	826.2	13	1286	0	64.2	45-110	0				
Anthracene	1049	13	1286	0	81.5	55-105	0				
Benzo(a)anthracene	1091	13	1286	0	84.8	50-110	0				
Benzo(a)pyrene	1102	13	1286	0	85.7	50-110	0				
Benzo(b)fluoranthene	1055	13	1286	0	82	45-115	0				
Benzo(k)fluoranthene	1073	13	1286	0	83.4	45-115	0				
Chrysene	1082	13	1286	0	84.1	55-110	0				
Dibenzo(a,h)anthracene	1148	13	1286	0	89.2	40-125	0				
Fluoranthene	1046	13	1286	0	81.3	55-115	0				
Fluorene	908.5	13	1286	0	70.6	50-110	0				
Indeno(1,2,3-cd)pyrene	1246	13	1286	0	96.9	40-120	0				
Naphthalene	824.3	13	1286	0	64.1	40-105	0				
Pyrene	1294	13	1286	0	101	45-125	0				
Surr: 2-Fluorobiphenyl	2183	0	3215	0	67.9	12-100	0				
Surr: 4-Terphenyl-d14	3574	0	3215	0	111	25-137	0				
Surr: Nitrobenzene-d5	2234	0	3215	0	69.5	37-107	0				

MSD				Sample ID: 15031672-03B MSD			Units: µg/Kg		Analysis Date: 4/2/2015 02:12 AM		
Client ID:		Run ID: SVMS4_150401B		SeqNo: 3206594		Prep Date: 4/1/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	979	13	1312	0	74.6	45-110	826.2	16.9	30		
Anthracene	1104	13	1312	0	84.1	55-105	1049	5.11	30		
Benzo(a)anthracene	1108	13	1312	0	84.4	50-110	1091	1.56	30		
Benzo(a)pyrene	1157	13	1312	0	88.2	50-110	1102	4.91	30		
Benzo(b)fluoranthene	1092	13	1312	0	83.2	45-115	1055	3.42	30		
Benzo(k)fluoranthene	1102	13	1312	0	84	45-115	1073	2.69	30		
Chrysene	1049	13	1312	0	79.9	55-110	1082	3.15	30		
Dibenzo(a,h)anthracene	1107	13	1312	0	84.3	40-125	1148	3.61	30		
Fluoranthene	1052	13	1312	0	80.2	55-115	1046	0.609	30		
Fluorene	1034	13	1312	0	78.8	50-110	908.5	12.9	30		
Indeno(1,2,3-cd)pyrene	1129	13	1312	0	86	40-120	1246	9.83	30		
Naphthalene	930.4	13	1312	0	70.9	40-105	824.3	12.1	30		
Pyrene	1270	13	1312	0	96.8	45-125	1294	1.82	30		
Surr: 2-Fluorobiphenyl	2612	0	3281	0	79.6	12-100	2183	17.9	40		
Surr: 4-Terphenyl-d14	3538	0	3281	0	108	25-137	3574	0.999	40		
Surr: Nitrobenzene-d5	2644	0	3281	0	80.6	37-107	2234	16.8	40		

The following samples were analyzed in this batch:

15031650-04A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031650  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69223** Instrument ID **VMS8** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69223-69223</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/1/2015 04:09 PM</b>		
Client ID:		Run ID: <b>VMS8_150401A</b>			SeqNo: <b>3206416</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
<i>Surr: 1,2-Dichloroethane-d4</i>	1056	0	1000	0	106	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	991	0	1000	0	99.1	70-130	0			
<i>Surr: Dibromofluoromethane</i>	953.5	0	1000	0	95.4	70-130	0			
<i>Surr: Toluene-d8</i>	973.5	0	1000	0	97.4	70-130	0			

LCS		Sample ID: <b>LCS-69223-69223</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/1/2015 02:31 PM</b>		
Client ID:		Run ID: <b>VMS8_150401A</b>			SeqNo: <b>3206415</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	989	30	1000	0	98.9	75-125	0			
Ethylbenzene	992	30	1000	0	99.2	75-125	0			
m,p-Xylene	1994	60	2000	0	99.7	80-125	0			
o-Xylene	989.5	30	1000	0	99	75-125	0			
Toluene	1024	30	1000	0	102	70-125	0			
Xylenes, Total	2984	90	3000	0	99.5	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	1027	0	1000	0	103	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	989.5	0	1000	0	99	70-130	0			
<i>Surr: Dibromofluoromethane</i>	997	0	1000	0	99.7	70-130	0			
<i>Surr: Toluene-d8</i>	986.5	0	1000	0	98.6	70-130	0			

MS		Sample ID: <b>15031673-03A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/4/2015 12:02 PM</b>		
Client ID:		Run ID: <b>VMS7_150403A</b>			SeqNo: <b>3210680</b>		Prep Date: <b>3/30/2015</b>		DF: <b>100</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	181800	5,500	182500	2082	98.5	75-125	0			
Ethylbenzene	183900	5,500	182500	1819	99.8	75-125	0			
m,p-Xylene	365000	11,000	365000	4300	98.8	80-125	0			
o-Xylene	181600	5,500	182500	4411	97.1	75-125	0			
Toluene	186500	5,500	182500	6401	98.7	70-125	0			
Xylenes, Total	546500	16,000	547400	8712	98.2	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	178600	0	182500	0	97.8	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	180400	0	182500	0	98.8	70-130	0			
<i>Surr: Dibromofluoromethane</i>	180100	0	182500	0	98.7	70-130	0			
<i>Surr: Toluene-d8</i>	179700	0	182500	0	98.5	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 15031650  
**Project:** C28 Pit Assessment

## QC BATCH REPORT

Batch ID: **69223**      Instrument ID **VMS8**      Method: **SW8260B**

MSD		Sample ID: 15031673-03A MSD				Units: µg/Kg		Analysis Date: 4/4/2015 12:27 PM		
Client ID:		Run ID: VMS7_150403A		SeqNo: 3210681		Prep Date: 3/30/2015		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	181500	5,500	182500	2082	98.3	75-125	181800	0.201	30	
Ethylbenzene	183800	5,500	182500	1819	99.7	75-125	183900	0.0993	30	
m,p-Xylene	361900	11,000	365000	4300	98	80-125	365000	0.854	30	
o-Xylene	180000	5,500	182500	4411	96.2	75-125	181600	0.858	30	
Toluene	185300	5,500	182500	6401	98	70-125	186500	0.638	30	
Xylenes, Total	541900	16,000	547400	8712	97.4	75-125	546500	0.855	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	177600	0	182500	0	97.3	70-130	178600	0.564	30	
<i>Surr: 4-Bromofluorobenzene</i>	181600	0	182500	0	99.5	70-130	180400	0.655	30	
<i>Surr: Dibromofluoromethane</i>	178700	0	182500	0	98	70-130	180100	0.763	30	
<i>Surr: Toluene-d8</i>	178700	0	182500	0	98	70-130	179700	0.56	30	

The following samples were analyzed in this batch:

15031650-04A
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Sample Receipt Checklist

Client Name: **ENCANA2**

Date/Time Received: **27-Mar-15 09:30**

Work Order: **15031650**

Received by: **KRW**

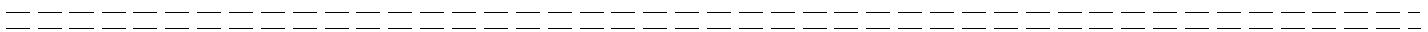
Checklist completed by Chad Whelton 30-Mar-15  
eSignature Date

Reviewed by: Chad Whelton 30-Mar-15  
eSignature Date

Matrices: Soil  
 Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>4.2 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>3/27/2015 1:58:21 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u></u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction:



06-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28 Pit Assessment**

Work Order: **15031672**

Dear Christopher,

ALS Environmental received 7 samples on 28-Mar-2015 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 22.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS Environmental logo icon consisting of a stylized flame inside a triangle.

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RIGHT SOLUTIONS RIGHT PARTNER

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Work Order:** 15031672

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
15031672-01	20150326-C28 (PITW01) 30-32'	Soil		3/26/2015 08:55	3/28/2015 10:30	<input type="checkbox"/>
15031672-02	20150326-C28 (PITW02) 6-8'	Soil		3/26/2015 10:25	3/28/2015 10:30	<input type="checkbox"/>
15031672-03	20150326-C28 (PITW02) 20-22'	Soil		3/26/2015 10:55	3/28/2015 10:30	<input type="checkbox"/>
15031672-04	20150326-C28 (PITMID02) 10-12'	Soil		3/26/2015 12:55	3/28/2015 10:30	<input type="checkbox"/>
15031672-05	20150326-C28 (PITMID02) 20-22'	Soil		3/26/2015 13:15	3/28/2015 10:30	<input type="checkbox"/>
15031672-06	20150326-C28 (PITMID01) 5-7'	Soil		3/26/2015 14:05	3/28/2015 10:30	<input type="checkbox"/>
15031672-07	20150326-C28 (PITMID01) 20-22'	Soil		3/26/2015 14:40	3/28/2015 10:30	<input type="checkbox"/>

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**WorkOrder:** 15031672

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

# ALS Group USA, Corp

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITW01) 30-32'  
**Collection Date:** 3/26/2015 08:55 AM

**Work Order:** 15031672  
**Lab ID:** 15031672-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/1/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.5	4.5	mg/Kg-dry	1	4/2/2015 12:49
Surr: 4-Terphenyl-d14	75.3			39-133	%REC	1	4/2/2015 12:49
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/1/2015 01:55
Surr: Toluene-d8	96.0			50-150	%REC	1	4/1/2015 01:55
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/1/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0027	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Anthracene	U		0.0035	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Benzo(a)anthracene	U		0.0044	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Benzo(a)pyrene	U		0.0015	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Benzo(b)fluoranthene	U		0.0025	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Benzo(k)fluoranthene	U		0.0045	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Chrysene	U		0.0061	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Dibenzo(a,h)anthracene	U		0.0023	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Fluoranthene	U		0.0044	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Fluorene	U		0.0040	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Indeno(1,2,3-cd)pyrene	U		0.0045	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Naphthalene	U		0.0019	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Pyrene	U		0.0055	0.0072	mg/Kg-dry	1	4/2/2015 09:10
Surr: 2-Fluorobiphenyl	71.4			12-100	%REC	1	4/2/2015 09:10
Surr: 4-Terphenyl-d14	108			25-137	%REC	1	4/2/2015 09:10
Surr: Nitrobenzene-d5	63.4			37-107	%REC	1	4/2/2015 09:10
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15	Analyst: <b>LSY</b>
Benzene	U		0.013	0.033	mg/Kg-dry	1	4/3/2015 08:45
Ethylbenzene	U		0.012	0.033	mg/Kg-dry	1	4/3/2015 08:45
m,p-Xylene	U		0.025	0.066	mg/Kg-dry	1	4/3/2015 08:45
o-Xylene	U		0.014	0.033	mg/Kg-dry	1	4/3/2015 08:45
Toluene	U		0.012	0.033	mg/Kg-dry	1	4/3/2015 08:45
Xylenes, Total	U		0.039	0.098	mg/Kg-dry	1	4/3/2015 08:45
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	4/3/2015 08:45
Surr: 4-Bromofluorobenzene	96.2			70-130	%REC	1	4/3/2015 08:45
Surr: Dibromofluoromethane	93.0			70-130	%REC	1	4/3/2015 08:45
Surr: Toluene-d8	94.4			70-130	%REC	1	4/3/2015 08:45
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
Moisture	8.4		0.025	0.050	% of sample	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITW02) 6-8'  
**Collection Date:** 3/26/2015 10:25 AM

**Work Order:** 15031672  
**Lab ID:** 15031672-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/1/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>540</b>		<b>1.8</b>	<b>5.5</b>	<b>mg/Kg-dry</b>	1	4/2/2015 01:49
Surr: 4-Terphenyl-d14	60.0			39-133	%REC	1	4/2/2015 01:49
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15	Analyst: <b>IT</b>
<b>GRO (C6-C10)</b>	<b>35</b>		<b>1.6</b>	<b>3.3</b>	<b>mg/Kg-dry</b>	1	4/1/2015 02:20
Surr: Toluene-d8	99.5			50-150	%REC	1	4/1/2015 02:20
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/1/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0033	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Anthracene	U		0.0042	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Benzo(a)anthracene	U		0.0053	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Benzo(a)pyrene	U		0.0019	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Benzo(b)fluoranthene	U		0.0030	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Benzo(k)fluoranthene	U		0.0055	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Chrysene	U		0.0074	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Dibenzo(a,h)anthracene	U		0.0029	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Fluoranthene	U		0.0054	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Fluorene	U		0.0049	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Indeno(1,2,3-cd)pyrene	U		0.0055	0.0088	mg/Kg-dry	1	4/2/2015 09:36
<b>Naphthalene</b>	<b>0.22</b>		<b>0.0023</b>	<b>0.0088</b>	<b>mg/Kg-dry</b>	1	4/2/2015 09:36
Pyrene	U		0.0066	0.0088	mg/Kg-dry	1	4/2/2015 09:36
Surr: 2-Fluorobiphenyl	73.8			12-100	%REC	1	4/2/2015 09:36
Surr: 4-Terphenyl-d14	99.3			25-137	%REC	1	4/2/2015 09:36
Surr: Nitrobenzene-d5	60.8			37-107	%REC	1	4/2/2015 09:36
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15	Analyst: <b>LSY</b>
<b>Benzene</b>	<b>0.87</b>		<b>0.016</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	4/3/2015 09:10
<b>Ethylbenzene</b>	<b>0.077</b>		<b>0.015</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	4/3/2015 09:10
<b>m,p-Xylene</b>	<b>0.67</b>		<b>0.030</b>	<b>0.080</b>	<b>mg/Kg-dry</b>	1	4/3/2015 09:10
<b>o-Xylene</b>	<b>0.11</b>		<b>0.017</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	4/3/2015 09:10
<b>Toluene</b>	<b>1.3</b>		<b>0.015</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	4/3/2015 09:10
<b>Xylenes, Total</b>	<b>0.78</b>		<b>0.047</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	4/3/2015 09:10
Surr: 1,2-Dichloroethane-d4	106			70-130	%REC	1	4/3/2015 09:10
Surr: 4-Bromofluorobenzene	97.0			70-130	%REC	1	4/3/2015 09:10
Surr: Dibromofluoromethane	89.8			70-130	%REC	1	4/3/2015 09:10
Surr: Toluene-d8	93.9			70-130	%REC	1	4/3/2015 09:10
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>25</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITW02) 20-22'  
**Collection Date:** 3/26/2015 10:55 AM

**Work Order:** 15031672  
**Lab ID:** 15031672-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/1/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.4	4.4	mg/Kg-dry	1	4/1/2015 17:17
Surr: 4-Terphenyl-d14	81.1			39-133	%REC	1	4/1/2015 17:17
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/1/2015 02:45
Surr: Toluene-d8	108			50-150	%REC	1	4/1/2015 02:45
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/1/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Anthracene	U		0.0034	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Benzo(a)anthracene	U		0.0042	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Benzo(a)pyrene	U		0.0015	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Benzo(b)fluoranthene	U		0.0024	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Benzo(k)fluoranthene	U		0.0044	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Chrysene	U		0.0059	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Dibenzo(a,h)anthracene	U		0.0023	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Fluoranthene	U		0.0043	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Fluorene	U		0.0039	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Indeno(1,2,3-cd)pyrene	U		0.0044	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Naphthalene	U		0.0018	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Pyrene	U		0.0053	0.0070	mg/Kg-dry	1	4/2/2015 02:39
Surr: 2-Fluorobiphenyl	76.0			12-100	%REC	1	4/2/2015 02:39
Surr: 4-Terphenyl-d14	103			25-137	%REC	1	4/2/2015 02:39
Surr: Nitrobenzene-d5	71.7			37-107	%REC	1	4/2/2015 02:39
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15	Analyst: <b>LSY</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/3/2015 09:36
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/3/2015 09:36
m,p-Xylene	U		0.025	0.065	mg/Kg-dry	1	4/3/2015 09:36
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/3/2015 09:36
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/3/2015 09:36
Xylenes, Total	U		0.038	0.097	mg/Kg-dry	1	4/3/2015 09:36
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	4/3/2015 09:36
Surr: 4-Bromofluorobenzene	96.4			70-130	%REC	1	4/3/2015 09:36
Surr: Dibromofluoromethane	91.8			70-130	%REC	1	4/3/2015 09:36
Surr: Toluene-d8	94.0			70-130	%REC	1	4/3/2015 09:36
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
Moisture	7.4		0.025	0.050	% of sample	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITMID02) 10-12'  
**Collection Date:** 3/26/2015 12:55 PM

**Work Order:** 15031672  
**Lab ID:** 15031672-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/1/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.4	4.3	mg/Kg-dry	1	4/2/2015 02:19
Surr: 4-Terphenyl-d14	63.4			39-133	%REC	1	4/2/2015 02:19
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.6	mg/Kg-dry	1	4/1/2015 03:10
Surr: Toluene-d8	102			50-150	%REC	1	4/1/2015 03:10
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/1/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Anthracene	U		0.0033	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Benzo(a)anthracene	U		0.0042	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Benzo(a)pyrene	U		0.0015	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Benzo(b)fluoranthene	U		0.0024	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Benzo(k)fluoranthene	U		0.0043	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Chrysene	U		0.0058	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Dibenzo(a,h)anthracene	U		0.0022	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Fluoranthene	U		0.0042	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Fluorene	U		0.0038	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Indeno(1,2,3-cd)pyrene	U		0.0043	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Naphthalene	U		0.0018	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Pyrene	U		0.0052	0.0069	mg/Kg-dry	1	4/2/2015 10:03
Surr: 2-Fluorobiphenyl	58.7			12-100	%REC	1	4/2/2015 10:03
Surr: 4-Terphenyl-d14	77.0			25-137	%REC	1	4/2/2015 10:03
Surr: Nitrobenzene-d5	49.9			37-107	%REC	1	4/2/2015 10:03
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15	Analyst: <b>LSY</b>
Benzene	U		0.013	0.031	mg/Kg-dry	1	4/3/2015 10:01
Ethylbenzene	U		0.012	0.031	mg/Kg-dry	1	4/3/2015 10:01
m,p-Xylene	U		0.024	0.063	mg/Kg-dry	1	4/3/2015 10:01
o-Xylene	U		0.013	0.031	mg/Kg-dry	1	4/3/2015 10:01
Toluene	U		0.012	0.031	mg/Kg-dry	1	4/3/2015 10:01
Xylenes, Total	U		0.037	0.094	mg/Kg-dry	1	4/3/2015 10:01
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	4/3/2015 10:01
Surr: 4-Bromofluorobenzene	95.5			70-130	%REC	1	4/3/2015 10:01
Surr: Dibromofluoromethane	89.8			70-130	%REC	1	4/3/2015 10:01
Surr: Toluene-d8	95.8			70-130	%REC	1	4/3/2015 10:01
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
Moisture	4.4		0.025	0.050	% of sample	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITMID02) 20-22'  
**Collection Date:** 3/26/2015 01:15 PM

**Work Order:** 15031672  
**Lab ID:** 15031672-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015M</b>		Prep: SW3541 / 4/1/15		Analyst: <b>IT</b>
DRO (C10-C28)	U		1.5	4.5	mg/Kg-dry	1	4/2/2015 02:49
Surr: 4-Terphenyl-d14	73.2			39-133	%REC	1	4/2/2015 02:49
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15		Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/1/2015 03:59
Surr: Toluene-d8	105			50-150	%REC	1	4/1/2015 03:59
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/2/15		Analyst: <b>RM</b>
Acenaphthene	U		0.0027	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Anthracene	U		0.0035	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Benzo(a)anthracene	U		0.0043	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Benzo(a)pyrene	U		0.0015	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Benzo(b)fluoranthene	U		0.0024	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Benzo(k)fluoranthene	U		0.0045	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Chrysene	U		0.0060	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Dibenzo(a,h)anthracene	U		0.0023	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Fluoranthene	U		0.0044	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Fluorene	U		0.0040	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Indeno(1,2,3-cd)pyrene	U		0.0044	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Naphthalene	U		0.0018	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Pyrene	U		0.0054	0.0071	mg/Kg-dry	1	4/2/2015 17:14
Surr: 2-Fluorobiphenyl	73.7			12-100	%REC	1	4/2/2015 17:14
Surr: 4-Terphenyl-d14	127			25-137	%REC	1	4/2/2015 17:14
Surr: Nitrobenzene-d5	86.1			37-107	%REC	1	4/2/2015 17:14
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15		Analyst: <b>LSY</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/3/2015 10:26
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/3/2015 10:26
m,p-Xylene	U		0.025	0.065	mg/Kg-dry	1	4/3/2015 10:26
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/3/2015 10:26
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/3/2015 10:26
Xylenes, Total	U		0.038	0.097	mg/Kg-dry	1	4/3/2015 10:26
Surr: 1,2-Dichloroethane-d4	106			70-130	%REC	1	4/3/2015 10:26
Surr: 4-Bromofluorobenzene	95.6			70-130	%REC	1	4/3/2015 10:26
Surr: Dibromofluoromethane	90.6			70-130	%REC	1	4/3/2015 10:26
Surr: Toluene-d8	93.6			70-130	%REC	1	4/3/2015 10:26
<b>MOISTURE</b>							
			Method: <b>E160.3M</b>				Analyst: <b>EVB</b>
Moisture	7.5		0.025	0.050	% of sample	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITMID01) 5-7'  
**Collection Date:** 3/26/2015 02:05 PM

**Work Order:** 15031672  
**Lab ID:** 15031672-06  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015M		Prep: SW3541 / 4/1/15		Analyst: IT
<b>DRO (C10-C28)</b>	<b>1,100</b>		<b>1.6</b>	<b>4.8</b>	<b>mg/Kg-dry</b>	1	4/2/2015 03:19
Surr: 4-Terphenyl-d14	69.9			39-133	%REC	1	4/2/2015 03:19
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015D		Prep: SW5035 / 3/30/15		Analyst: IT
<b>GRO (C6-C10)</b>	<b>87</b>		<b>1.4</b>	<b>2.9</b>	<b>mg/Kg-dry</b>	1	4/1/2015 04:24
Surr: Toluene-d8	117			50-150	%REC	1	4/1/2015 04:24
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: SW846 8270D		Prep: SW3541 / 4/2/15		Analyst: RM
Acenaphthene	U		0.0029	0.0076	mg/Kg-dry	1	4/2/2015 17:34
<b>Anthracene</b>	<b>0.049</b>		<b>0.0037</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Benzo(a)anthracene</b>	<b>0.18</b>		<b>0.0046</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Benzo(a)pyrene</b>	<b>0.091</b>		<b>0.0016</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Benzo(b)fluoranthene</b>	<b>0.31</b>		<b>0.0026</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Benzo(k)fluoranthene</b>	<b>0.071</b>		<b>0.0048</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Chrysene</b>	<b>0.24</b>		<b>0.0064</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Dibenzo(a,h)anthracene</b>	<b>0.040</b>		<b>0.0025</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Fluoranthene</b>	<b>0.30</b>		<b>0.0047</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Fluorene</b>	<b>0.084</b>		<b>0.0042</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Indeno(1,2,3-cd)pyrene</b>	<b>0.12</b>		<b>0.0048</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Naphthalene</b>	<b>0.19</b>		<b>0.0020</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
<b>Pyrene</b>	<b>0.28</b>		<b>0.0058</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/2/2015 17:34
Surr: 2-Fluorobiphenyl	64.4			12-100	%REC	1	4/2/2015 17:34
Surr: 4-Terphenyl-d14	93.6			25-137	%REC	1	4/2/2015 17:34
Surr: Nitrobenzene-d5	97.6			37-107	%REC	1	4/2/2015 17:34
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: SW8260B		Prep: SW5035 / 3/30/15		Analyst: LSY
<b>Benzene</b>	<b>0.15</b>		<b>0.014</b>	<b>0.035</b>	<b>mg/Kg-dry</b>	1	4/3/2015 10:52
<b>Ethylbenzene</b>	<b>0.028</b>	J	<b>0.013</b>	<b>0.035</b>	<b>mg/Kg-dry</b>	1	4/3/2015 10:52
<b>m,p-Xylene</b>	<b>0.49</b>		<b>0.026</b>	<b>0.069</b>	<b>mg/Kg-dry</b>	1	4/3/2015 10:52
<b>o-Xylene</b>	<b>0.077</b>		<b>0.015</b>	<b>0.035</b>	<b>mg/Kg-dry</b>	1	4/3/2015 10:52
<b>Toluene</b>	<b>0.17</b>		<b>0.013</b>	<b>0.035</b>	<b>mg/Kg-dry</b>	1	4/3/2015 10:52
<b>Xylenes, Total</b>	<b>0.57</b>		<b>0.041</b>	<b>0.10</b>	<b>mg/Kg-dry</b>	1	4/3/2015 10:52
Surr: 1,2-Dichloroethane-d4	107			70-130	%REC	1	4/3/2015 10:52
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	4/3/2015 10:52
Surr: Dibromofluoromethane	92.8			70-130	%REC	1	4/3/2015 10:52
Surr: Toluene-d8	94.4			70-130	%REC	1	4/3/2015 10:52
<b>MOISTURE</b>							
			Method: E160.3M				Analyst: EVB
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 06-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment  
**Sample ID:** 20150326-C28 (PITMID01) 20-22'  
**Collection Date:** 3/26/2015 02:40 PM

**Work Order:** 15031672  
**Lab ID:** 15031672-07  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/1/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.5	4.4	mg/Kg-dry	1	4/2/2015 03:49
Surr: 4-Terphenyl-d14	79.3			39-133	%REC	1	4/2/2015 03:49
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 3/30/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/1/2015 04:49
Surr: Toluene-d8	107			50-150	%REC	1	4/1/2015 04:49
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/2/15	Analyst: <b>RM</b>
Acenaphthene	U		0.0026	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Anthracene	U		0.0034	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Benzo(a)anthracene	U		0.0043	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Benzo(a)pyrene	U		0.0015	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Benzo(b)fluoranthene	U		0.0024	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Benzo(k)fluoranthene	U		0.0044	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Chrysene	U		0.0059	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Dibenzo(a,h)anthracene	U		0.0023	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Fluoranthene	U		0.0043	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Fluorene	U		0.0039	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Indeno(1,2,3-cd)pyrene	U		0.0044	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Naphthalene	U		0.0018	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Pyrene	U		0.0053	0.0070	mg/Kg-dry	1	4/2/2015 17:54
Surr: 2-Fluorobiphenyl	68.6			12-100	%REC	1	4/2/2015 17:54
Surr: 4-Terphenyl-d14	121			25-137	%REC	1	4/2/2015 17:54
Surr: Nitrobenzene-d5	79.6			37-107	%REC	1	4/2/2015 17:54
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 3/30/15	Analyst: <b>LSY</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/3/2015 11:17
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/3/2015 11:17
m,p-Xylene	U		0.024	0.065	mg/Kg-dry	1	4/3/2015 11:17
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/3/2015 11:17
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/3/2015 11:17
Xylenes, Total	U		0.038	0.097	mg/Kg-dry	1	4/3/2015 11:17
Surr: 1,2-Dichloroethane-d4	106			70-130	%REC	1	4/3/2015 11:17
Surr: 4-Bromofluorobenzene	99.2			70-130	%REC	1	4/3/2015 11:17
Surr: Dibromofluoromethane	88.1			70-130	%REC	1	4/3/2015 11:17
Surr: Toluene-d8	93.2			70-130	%REC	1	4/3/2015 11:17
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
Moisture	7.2		0.025	0.050	% of sample	1	4/2/2015 16:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 15031672  
**Project:** C28 Pit Assessment

**QC BATCH REPORT**

Batch ID: **69303** Instrument ID **GC8** Method: **SW8015M**

<b>MBLK</b>		Sample ID: <b>DBLKS1-69303-69303</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/1/2015 12:12 PM</b>		
Client ID:		Run ID: <b>GC8_150401A</b>		SeqNo: <b>3205465</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.554	0	2	0	77.7	39-133	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-69303-69303</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/1/2015 12:42 PM</b>		
Client ID:		Run ID: <b>GC8_150401A</b>		SeqNo: <b>3205470</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	167.6	5.0	200	0	83.8	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.216	0	2	0	60.8	39-133	0			

<b>MS</b>		Sample ID: <b>15031672-03B MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/1/2015 01:42 PM</b>		
Client ID: <b>20150326-C28 (PITW02) 20-22'</b>		Run ID: <b>GC8_150401A</b>		SeqNo: <b>3206256</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	257.3	8.0	319.6	0	80.5	48-110	0			
<i>Surr: 4-Terphenyl-d14</i>	1.904	0	3.196	0	59.6	39-133	0			

<b>MSD</b>		Sample ID: <b>15031672-03B MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/1/2015 02:13 PM</b>		
Client ID: <b>20150326-C28 (PITW02) 20-22'</b>		Run ID: <b>GC8_150401A</b>		SeqNo: <b>3206258</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	248.6	8.1	325.8	0	76.3	48-110	257.3	3.44	30	
<i>Surr: 4-Terphenyl-d14</i>	1.819	0	3.258	0	55.8	39-133	1.904	4.58	30	

The following samples were analyzed in this batch:

15031672-01B	15031672-02B	15031672-03B
15031672-04A	15031672-05B	15031672-06A
15031672-07B		

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031672  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69203** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69203-69203</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 12:19 PM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3201868</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5173	0	5000	0	103	50-150	0			

LCS		Sample ID: <b>LCS-69203-69203</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 11:54 AM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3201867</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	420800	2,500	500000	0	84.2	70-130	0			
<i>Surr: Toluene-d8</i>	4405	0	5000	0	88.1	50-150	0			

MS		Sample ID: <b>15031352-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 10:12 PM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3202054</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1866000	10,000	2092000	0	89.2	70-130	0			
<i>Surr: Toluene-d8</i>	19090	0	20920	0	91.3	50-150	0			

MSD		Sample ID: <b>15031352-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>3/30/2015 10:37 PM</b>		
Client ID:		Run ID: <b>GC9_150330A</b>		SeqNo: <b>3202056</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1794000	10,000	2092000	0	85.8	70-130	1866000	3.91	30	
<i>Surr: Toluene-d8</i>	18520	0	20920	0	88.5	50-150	19090	3.05	30	

The following samples were analyzed in this batch:

15031672-01A	15031672-02A	15031672-03A
15031672-04A	15031672-05A	15031672-06A
15031672-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 15031672  
**Project:** C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69302**      Instrument ID **SVMS4**      Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-69302-69302</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/1/2015 11:43 PM</b>		
Client ID:		Run ID: <b>SVMS4_150401B</b>		SeqNo: <b>3206591</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
<i>Surr: 2-Fluorobiphenyl</i>	1170	0	1667	0	70.2	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1945	0	1667	0	117	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1152	0	1667	0	69.1	37-107	0			

LCS		Sample ID: <b>SLCSS1-69302-69302</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 12:11 PM</b>		
Client ID:		Run ID: <b>SVMS4_150401B</b>		SeqNo: <b>3206624</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	441.3	6.7	666.7	0	66.2	45-110	0			
Anthracene	533.3	6.7	666.7	0	80	55-105	0			
Benzo(a)anthracene	533	6.7	666.7	0	79.9	50-110	0			
Benzo(a)pyrene	546.7	6.7	666.7	0	82	50-110	0			
Benzo(b)fluoranthene	538.3	6.7	666.7	0	80.7	45-115	0			
Benzo(k)fluoranthene	524	6.7	666.7	0	78.6	45-115	0			
Chrysene	529	6.7	666.7	0	79.3	55-110	0			
Dibenzo(a,h)anthracene	553.3	6.7	666.7	0	83	40-125	0			
Fluoranthene	513.3	6.7	666.7	0	77	55-115	0			
Fluorene	488	6.7	666.7	0	73.2	50-110	0			
Indeno(1,2,3-cd)pyrene	570.3	6.7	666.7	0	85.5	40-120	0			
Naphthalene	450.7	6.7	666.7	0	67.6	40-105	0			
Pyrene	626.7	6.7	666.7	0	94	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1171	0	1667	0	70.3	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1694	0	1667	0	102	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1213	0	1667	0	72.8	37-107	0			

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031672  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: 69302 Instrument ID SVMS4 Method: SW846 8270D

MS				Sample ID: 15031672-03B MS			Units: µg/Kg		Analysis Date: 4/2/2015 01:45 AM		
Client ID: 20150326-C28 (PITW02) 20-22'				Run ID: SVMS4_150401B			SeqNo: 3206593		Prep Date: 4/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	826.2	13	1286	0	64.2	45-110	0				
Anthracene	1049	13	1286	0	81.5	55-105	0				
Benzo(a)anthracene	1091	13	1286	0	84.8	50-110	0				
Benzo(a)pyrene	1102	13	1286	0	85.7	50-110	0				
Benzo(b)fluoranthene	1055	13	1286	0	82	45-115	0				
Benzo(k)fluoranthene	1073	13	1286	0	83.4	45-115	0				
Chrysene	1082	13	1286	0	84.1	55-110	0				
Dibenzo(a,h)anthracene	1148	13	1286	0	89.2	40-125	0				
Fluoranthene	1046	13	1286	0	81.3	55-115	0				
Fluorene	908.5	13	1286	0	70.6	50-110	0				
Indeno(1,2,3-cd)pyrene	1246	13	1286	0	96.9	40-120	0				
Naphthalene	824.3	13	1286	0	64.1	40-105	0				
Pyrene	1294	13	1286	0	101	45-125	0				
Surr: 2-Fluorobiphenyl	2183	0	3215	0	67.9	12-100	0				
Surr: 4-Terphenyl-d14	3574	0	3215	0	111	25-137	0				
Surr: Nitrobenzene-d5	2234	0	3215	0	69.5	37-107	0				

MSD				Sample ID: 15031672-03B MSD			Units: µg/Kg		Analysis Date: 4/2/2015 02:12 AM		
Client ID: 20150326-C28 (PITW02) 20-22'				Run ID: SVMS4_150401B			SeqNo: 3206594		Prep Date: 4/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	979	13	1312	0	74.6	45-110	826.2	16.9	30		
Anthracene	1104	13	1312	0	84.1	55-105	1049	5.11	30		
Benzo(a)anthracene	1108	13	1312	0	84.4	50-110	1091	1.56	30		
Benzo(a)pyrene	1157	13	1312	0	88.2	50-110	1102	4.91	30		
Benzo(b)fluoranthene	1092	13	1312	0	83.2	45-115	1055	3.42	30		
Benzo(k)fluoranthene	1102	13	1312	0	84	45-115	1073	2.69	30		
Chrysene	1049	13	1312	0	79.9	55-110	1082	3.15	30		
Dibenzo(a,h)anthracene	1107	13	1312	0	84.3	40-125	1148	3.61	30		
Fluoranthene	1052	13	1312	0	80.2	55-115	1046	0.609	30		
Fluorene	1034	13	1312	0	78.8	50-110	908.5	12.9	30		
Indeno(1,2,3-cd)pyrene	1129	13	1312	0	86	40-120	1246	9.83	30		
Naphthalene	930.4	13	1312	0	70.9	40-105	824.3	12.1	30		
Pyrene	1270	13	1312	0	96.8	45-125	1294	1.82	30		
Surr: 2-Fluorobiphenyl	2612	0	3281	0	79.6	12-100	2183	17.9	40		
Surr: 4-Terphenyl-d14	3538	0	3281	0	108	25-137	3574	0.999	40		
Surr: Nitrobenzene-d5	2644	0	3281	0	80.6	37-107	2234	16.8	40		

The following samples were analyzed in this batch:

15031672-01B	15031672-02B	15031672-03B
15031672-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 15031672  
**Project:** C28 Pit Assessment

## QC BATCH REPORT

Batch ID: **69342**      Instrument ID **SVMS5**      Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-69342-69342</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 03:59 PM</b>		
Client ID:		Run ID: <b>SVMS5_150402A</b>		SeqNo: <b>3209602</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
<i>Surr: 2-Fluorobiphenyl</i>	1130	0	1667	0	67.8	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1675	0	1667	0	100	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1251	0	1667	0	75.1	37-107	0			

LCS		Sample ID: <b>SLCSS1-69342-69342</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 04:21 PM</b>		
Client ID:		Run ID: <b>SVMS5_150402A</b>		SeqNo: <b>3209603</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	490.3	6.7	666.7	0	73.5	45-110	0			
Anthracene	572	6.7	666.7	0	85.8	55-105	0			
Benzo(a)anthracene	545.3	6.7	666.7	0	81.8	50-110	0			
Benzo(a)pyrene	536.7	6.7	666.7	0	80.5	50-110	0			
Benzo(b)fluoranthene	549.7	6.7	666.7	0	82.4	45-115	0			
Benzo(k)fluoranthene	558.7	6.7	666.7	0	83.8	45-115	0			
Chrysene	563	6.7	666.7	0	84.4	55-110	0			
Dibenzo(a,h)anthracene	495.7	6.7	666.7	0	74.3	40-125	0			
Fluoranthene	537	6.7	666.7	0	80.5	55-115	0			
Fluorene	508.7	6.7	666.7	0	76.3	50-110	0			
Indeno(1,2,3-cd)pyrene	487	6.7	666.7	0	73	40-120	0			
Naphthalene	488.7	6.7	666.7	0	73.3	40-105	0			
Pyrene	604.7	6.7	666.7	0	90.7	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1142	0	1667	0	68.5	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1632	0	1667	0	97.9	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1262	0	1667	0	75.7	37-107	0			

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031672  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: 69342 Instrument ID SVMS5 Method: SW846 8270D

MS				Sample ID: 15031719-03A MS			Units: µg/Kg		Analysis Date: 4/2/2015 05:07 PM		
Client ID:		Run ID: SVMS5_150402A		SeqNo: 3209604		Prep Date: 4/2/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	948.1	13	1309	13.13	71.4	45-110	0				
Anthracene	1171	13	1309	3.938	89.2	55-105	0				
Benzo(a)anthracene	1207	13	1309	122.7	82.9	50-110	0				
Benzo(a)pyrene	1176	13	1309	140.5	79.2	50-110	0				
Benzo(b)fluoranthene	1306	13	1309	225.8	82.5	45-115	0				
Benzo(k)fluoranthene	1151	13	1309	71.87	82.5	45-115	0				
Chrysene	1248	13	1309	161.5	83.1	55-110	0				
Dibenzo(a,h)anthracene	1006	13	1309	23.96	75.1	40-125	0				
Fluoranthene	1256	13	1309	277.6	74.7	55-115	0				
Fluorene	1032	13	1309	14.44	77.8	50-110	0				
Indeno(1,2,3-cd)pyrene	1068	13	1309	118.8	72.5	40-120	0				
Naphthalene	844.7	13	1309	3.61	64.3	40-105	0				
Pyrene	1464	13	1309	275.7	90.8	45-125	0				
Surr: 2-Fluorobiphenyl	2112	0	3271	0	64.6	12-100	0				
Surr: 4-Terphenyl-d14	3286	0	3271	0	100	25-137	0				
Surr: Nitrobenzene-d5	2194	0	3271	0	67.1	37-107	0				

MSD				Sample ID: 15031719-03A MSD			Units: µg/Kg		Analysis Date: 4/2/2015 05:29 PM		
Client ID:		Run ID: SVMS5_150402A		SeqNo: 3209605		Prep Date: 4/2/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	942.7	13	1253	13.13	74.2	45-110	948.1	0.561	30		
Anthracene	1152	13	1253	3.938	91.6	55-105	1171	1.65	30		
Benzo(a)anthracene	1163	13	1253	122.7	83	50-110	1207	3.7	30		
Benzo(a)pyrene	1144	13	1253	140.5	80.1	50-110	1176	2.81	30		
Benzo(b)fluoranthene	1270	13	1253	225.8	83.3	45-115	1306	2.81	30		
Benzo(k)fluoranthene	1106	13	1253	71.87	82.6	45-115	1151	3.96	30		
Chrysene	1200	13	1253	161.5	82.9	55-110	1248	3.93	30		
Dibenzo(a,h)anthracene	953.4	13	1253	23.96	74.2	40-125	1006	5.4	30		
Fluoranthene	1272	13	1253	277.6	79.4	55-115	1256	1.32	30		
Fluorene	1012	13	1253	14.44	79.6	50-110	1032	1.97	30		
Indeno(1,2,3-cd)pyrene	1029	13	1253	118.8	72.6	40-120	1068	3.74	30		
Naphthalene	864.4	13	1253	3.61	68.7	40-105	844.7	2.31	30		
Pyrene	1436	13	1253	275.7	92.6	45-125	1464	1.93	30		
Surr: 2-Fluorobiphenyl	2089	0	3132	0	66.7	12-100	2112	1.09	40		
Surr: 4-Terphenyl-d14	3071	0	3132	0	98	25-137	3286	6.77	40		
Surr: Nitrobenzene-d5	2209	0	3132	0	70.5	37-107	2194	0.678	40		

The following samples were analyzed in this batch:

15031672-05B	15031672-06A	15031672-07B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 15031672  
 Project: C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69223** Instrument ID **VMS8** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69223-69223</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/1/2015 04:09 PM</b>		
Client ID:		Run ID: <b>VMS8_150401A</b>			SeqNo: <b>3206416</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
<i>Surr: 1,2-Dichloroethane-d4</i>	1056	0	1000	0	106	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	991	0	1000	0	99.1	70-130	0			
<i>Surr: Dibromofluoromethane</i>	953.5	0	1000	0	95.4	70-130	0			
<i>Surr: Toluene-d8</i>	973.5	0	1000	0	97.4	70-130	0			

LCS		Sample ID: <b>LCS-69223-69223</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/1/2015 02:31 PM</b>		
Client ID:		Run ID: <b>VMS8_150401A</b>			SeqNo: <b>3206415</b>		Prep Date: <b>3/30/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	989	30	1000	0	98.9	75-125	0			
Ethylbenzene	992	30	1000	0	99.2	75-125	0			
m,p-Xylene	1994	60	2000	0	99.7	80-125	0			
o-Xylene	989.5	30	1000	0	99	75-125	0			
Toluene	1024	30	1000	0	102	70-125	0			
Xylenes, Total	2984	90	3000	0	99.5	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	1027	0	1000	0	103	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	989.5	0	1000	0	99	70-130	0			
<i>Surr: Dibromofluoromethane</i>	997	0	1000	0	99.7	70-130	0			
<i>Surr: Toluene-d8</i>	986.5	0	1000	0	98.6	70-130	0			

MS		Sample ID: <b>15031673-03A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/4/2015 12:02 PM</b>		
Client ID:		Run ID: <b>VMS7_150403A</b>			SeqNo: <b>3210680</b>		Prep Date: <b>3/30/2015</b>		DF: <b>100</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	181800	5,500	182500	2082	98.5	75-125	0			
Ethylbenzene	183900	5,500	182500	1819	99.8	75-125	0			
m,p-Xylene	365000	11,000	365000	4300	98.8	80-125	0			
o-Xylene	181600	5,500	182500	4411	97.1	75-125	0			
Toluene	186500	5,500	182500	6401	98.7	70-125	0			
Xylenes, Total	546500	16,000	547400	8712	98.2	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	178600	0	182500	0	97.8	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	180400	0	182500	0	98.8	70-130	0			
<i>Surr: Dibromofluoromethane</i>	180100	0	182500	0	98.7	70-130	0			
<i>Surr: Toluene-d8</i>	179700	0	182500	0	98.5	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 15031672  
**Project:** C28 Pit Assessment

# QC BATCH REPORT

Batch ID: **69223**      Instrument ID **VMS8**      Method: **SW8260B**

MSD		Sample ID: 15031673-03A MSD				Units: µg/Kg		Analysis Date: 4/4/2015 12:27 PM		
Client ID:		Run ID: VMS7_150403A			SeqNo: 3210681		Prep Date: 3/30/2015		DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	181500	5,500	182500	2082	98.3	75-125	181800	0.201	30	
Ethylbenzene	183800	5,500	182500	1819	99.7	75-125	183900	0.0993	30	
m,p-Xylene	361900	11,000	365000	4300	98	80-125	365000	0.854	30	
o-Xylene	180000	5,500	182500	4411	96.2	75-125	181600	0.858	30	
Toluene	185300	5,500	182500	6401	98	70-125	186500	0.638	30	
Xylenes, Total	541900	16,000	547400	8712	97.4	75-125	546500	0.855	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>177600</i>	<i>0</i>	<i>182500</i>	<i>0</i>	<i>97.3</i>	<i>70-130</i>	<i>178600</i>	<i>0.564</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>181600</i>	<i>0</i>	<i>182500</i>	<i>0</i>	<i>99.5</i>	<i>70-130</i>	<i>180400</i>	<i>0.655</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>178700</i>	<i>0</i>	<i>182500</i>	<i>0</i>	<i>98</i>	<i>70-130</i>	<i>180100</i>	<i>0.763</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>178700</i>	<i>0</i>	<i>182500</i>	<i>0</i>	<i>98</i>	<i>70-130</i>	<i>179700</i>	<i>0.56</i>	<i>30</i>	

The following samples were analyzed in this batch:

15031672-01A	15031672-02A	15031672-03A
15031672-04A	15031672-05A	15031672-06A
15031672-07A		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.





From: (616) 288-1033  
Nick Martinez  
ALS Environmental  
127 E. 1st Street

Origin ID: RILA



J151215022303W

Ship Date: 27MAR15  
ActWgt: 57.0 LB  
CAD: 2264840/NET3610

Dims: 24 X 15 X 15 IN

PARACHUTE, CO 81635

Delivery Address Bar Code



SHIP TO: (616) 399-6070  
sample receiving  
ALS Laboratory Group  
3352 128TH AVE

BILL SENDER

Ref # 032715-1  
Invoice #  
PO # Parachute  
Dept #

HOLLAND, MI 49424

1 of 2  
SATURDAY 12:00P  
PRIORITY OVERNIGHT

TRK# 7732 3845 4998

0201

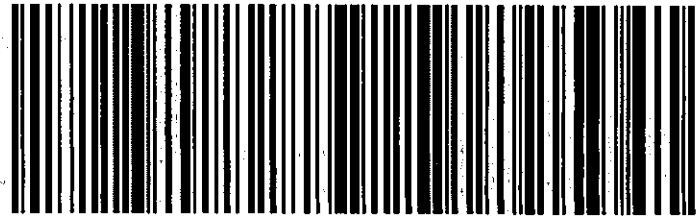
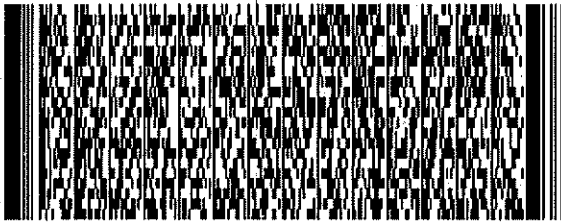
## MASTER ##

**X0 HLMA**

49424

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537J187BAEE4B

**After printing this label:**

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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Sample Receipt Checklist

Client Name: **ENCANA2**

Date/Time Received: **28-Mar-15 10:30**

Work Order: **15031672**

Received by: **DS**

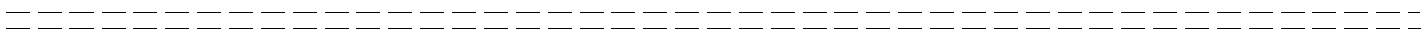
Checklist completed by Diane Shaw 30-Mar-15  
eSignature Date

Reviewed by: Chad Whelton 30-Mar-15  
eSignature Date

Matrices: Soil  
 Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>2.8 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>3/30/2015 9:25:59 AM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u></u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction:



08-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28**

Work Order: **1504071**

Dear Christopher,

ALS Environmental received 5 samples on 01-Apr-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS Environmental logo icon consisting of a small blue triangle with a yellow flame.

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Work Order:** 1504071

**Work Order Sample Summary**

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<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504071-01	20150327-C28 (PITE01) 25-27'	Soil		3/27/2015 09:10	4/1/2015 10:00	<input type="checkbox"/>
1504071-02	20150327-C28 (PITE02) 10-12'	Soil		3/27/2015 09:55	4/1/2015 10:00	<input type="checkbox"/>
1504071-03	20150327-C28 (PITE02) 20-22'	Soil		3/27/2015 10:20	4/1/2015 10:00	<input type="checkbox"/>
1504071-04	20150327-C28 (PITE03) 30-32'	Soil		3/27/2015 12:15	4/1/2015 10:00	<input type="checkbox"/>
1504071-05	20150327-C28 (PITN01) 30-32'	Soil		3/27/2015 13:10	4/1/2015 10:00	<input type="checkbox"/>

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**Client:** Encana Oil and Gas (USA) Inc.

**Project:** C28

**Work Order:** 1504071

**Case Narrative**

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Batch 69360, Method ICP\_6020\_S, Sample 1504071-01B: The metals reporting limits are elevated due to dilution for high concentrations of non-target analytes.

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**WorkOrder:** 1504071

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE01) 25-27'  
**Collection Date:** 3/27/2015 09:10 AM

**Work Order:** 1504071  
**Lab ID:** 1504071-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15		Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>10</b>		<b>1.6</b>	<b>4.7</b>	<b>mg/Kg-dry</b>	1	4/4/2015 01:47
Surr: 4-Terphenyl-d14	81.6			39-133	%REC	1	4/4/2015 01:47
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15		Analyst: <b>IT</b>
GRO (C6-C10)	U		1.4	2.9	mg/Kg-dry	1	4/2/2015 17:56
Surr: Toluene-d8	110			50-150	%REC	1	4/2/2015 17:56
<b>METALS BY ICP-MS</b>							
			Method: <b>SW6020A</b>		Prep: SW3050B / 4/2/15		Analyst: <b>ML</b>
<b>Arsenic</b>	<b>7.6</b>		<b>0.35</b>	<b>1.7</b>	<b>mg/Kg-dry</b>	4	4/3/2015 21:10
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/6/15		Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Anthracene	U		0.0037	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Benzo(a)anthracene	U		0.0046	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Benzo(a)pyrene	U		0.0016	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Benzo(b)fluoranthene	U		0.0026	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Benzo(k)fluoranthene	U		0.0047	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Chrysene	U		0.0064	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Dibenzo(a,h)anthracene	U		0.0025	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Fluoranthene	U		0.0047	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Fluorene	U		0.0042	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Indeno(1,2,3-cd)pyrene	U		0.0047	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Naphthalene	U		0.0020	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Pyrene	U		0.0058	0.0076	mg/Kg-dry	1	4/7/2015 15:17
Surr: 2-Fluorobiphenyl	69.5			12-100	%REC	1	4/7/2015 15:17
Surr: 4-Terphenyl-d14	109			25-137	%REC	1	4/7/2015 15:17
Surr: Nitrobenzene-d5	70.1			37-107	%REC	1	4/7/2015 15:17
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15		Analyst: <b>BG</b>
Benzene	U		0.014	0.035	mg/Kg-dry	1	4/7/2015 03:28
Ethylbenzene	U		0.013	0.035	mg/Kg-dry	1	4/7/2015 03:28
m,p-Xylene	U		0.027	0.071	mg/Kg-dry	1	4/7/2015 03:28
o-Xylene	U		0.015	0.035	mg/Kg-dry	1	4/7/2015 03:28
Toluene	U		0.013	0.035	mg/Kg-dry	1	4/7/2015 03:28
Xylenes, Total	U		0.042	0.11	mg/Kg-dry	1	4/7/2015 03:28
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	4/7/2015 03:28
Surr: 4-Bromofluorobenzene	96.0			70-130	%REC	1	4/7/2015 03:28
Surr: Dibromofluoromethane	88.3			70-130	%REC	1	4/7/2015 03:28
Surr: Toluene-d8	99.1			70-130	%REC	1	4/7/2015 03:28
<b>MOISTURE</b>							
			Method: <b>E160.3M</b>				Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE01) 25-27'  
**Collection Date:** 3/27/2015 09:10 AM

**Work Order:** 1504071  
**Lab ID:** 1504071-01  
**Matrix:** SOIL

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Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	15		0.025	0.050	% of sample	1	4/6/2015 14:25

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**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE02) 10-12'  
**Collection Date:** 3/27/2015 09:55 AM

**Work Order:** 1504071  
**Lab ID:** 1504071-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>28</b>		<b>1.7</b>	<b>5.1</b>	<b>mg/Kg-dry</b>	1	4/4/2015 02:17
Surr: 4-Terphenyl-d14	75.1			39-133	%REC	1	4/4/2015 02:17
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.5	3.1	mg/Kg-dry	1	4/2/2015 18:21
Surr: Toluene-d8	110			50-150	%REC	1	4/2/2015 18:21
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/6/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0030	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Anthracene	U		0.0039	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Benzo(a)anthracene	U		0.0049	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Benzo(a)pyrene	U		0.0017	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Benzo(b)fluoranthene	U		0.0028	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Benzo(k)fluoranthene	U		0.0051	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Chrysene	U		0.0068	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Dibenzo(a,h)anthracene	U		0.0026	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Fluoranthene	U		0.0050	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Fluorene	U		0.0045	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Indeno(1,2,3-cd)pyrene	U		0.0051	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Naphthalene	U		0.0021	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Pyrene	U		0.0061	0.0081	mg/Kg-dry	1	4/7/2015 15:40
Surr: 2-Fluorobiphenyl	53.4			12-100	%REC	1	4/7/2015 15:40
Surr: 4-Terphenyl-d14	89.6			25-137	%REC	1	4/7/2015 15:40
Surr: Nitrobenzene-d5	52.5			37-107	%REC	1	4/7/2015 15:40
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>BG</b>
Benzene	U		0.015	0.037	mg/Kg-dry	1	4/7/2015 03:54
Ethylbenzene	U		0.014	0.037	mg/Kg-dry	1	4/7/2015 03:54
<b>m,p-Xylene</b>	<b>0.037</b>	J	<b>0.028</b>	<b>0.075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 03:54
o-Xylene	U		0.016	0.037	mg/Kg-dry	1	4/7/2015 03:54
<b>Toluene</b>	<b>0.020</b>	J	<b>0.014</b>	<b>0.037</b>	<b>mg/Kg-dry</b>	1	4/7/2015 03:54
Xylenes, Total	U		0.044	0.11	mg/Kg-dry	1	4/7/2015 03:54
Surr: 1,2-Dichloroethane-d4	97.9			70-130	%REC	1	4/7/2015 03:54
Surr: 4-Bromofluorobenzene	95.7			70-130	%REC	1	4/7/2015 03:54
Surr: Dibromofluoromethane	85.8			70-130	%REC	1	4/7/2015 03:54
Surr: Toluene-d8	99.8			70-130	%REC	1	4/7/2015 03:54
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>20</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE02) 20-22'  
**Collection Date:** 3/27/2015 10:20 AM

**Work Order:** 1504071  
**Lab ID:** 1504071-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15		Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>9.2</b>		<b>1.5</b>	<b>4.7</b>	<b>mg/Kg-dry</b>	1	4/4/2015 02:47
Surr: 4-Terphenyl-d14	88.4			39-133	%REC	1	4/4/2015 02:47
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15		Analyst: <b>IT</b>
<b>GRO (C6-C10)</b>	<b>U</b>		<b>1.4</b>	<b>2.8</b>	<b>mg/Kg-dry</b>	1	4/2/2015 18:46
Surr: Toluene-d8	110			50-150	%REC	1	4/2/2015 18:46
<b>METALS BY ICP-MS</b>							
			Method: <b>SW6020A</b>		Prep: SW3050B / 4/3/15		Analyst: <b>ML</b>
<b>Arsenic</b>	<b>7.3</b>		<b>0.38</b>	<b>1.8</b>	<b>mg/Kg-dry</b>	4	4/4/2015 04:19
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/6/15		Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0075	mg/Kg-dry	1	4/7/2015 16:03
Anthracene	U		0.0036	0.0075	mg/Kg-dry	1	4/7/2015 16:03
<b>Benzo(a)anthracene</b>	<b>0.062</b>		<b>0.0045</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
<b>Benzo(a)pyrene</b>	<b>0.053</b>		<b>0.0016</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
<b>Benzo(b)fluoranthene</b>	<b>0.072</b>		<b>0.0025</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
<b>Benzo(k)fluoranthene</b>	<b>0.024</b>		<b>0.0047</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
<b>Chrysene</b>	<b>0.066</b>		<b>0.0063</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
Dibenzo(a,h)anthracene	U		0.0024	0.0075	mg/Kg-dry	1	4/7/2015 16:03
<b>Fluoranthene</b>	<b>0.12</b>		<b>0.0046</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
Fluorene	U		0.0042	0.0075	mg/Kg-dry	1	4/7/2015 16:03
<b>Indeno(1,2,3-cd)pyrene</b>	<b>0.039</b>		<b>0.0047</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
Naphthalene	U		0.0019	0.0075	mg/Kg-dry	1	4/7/2015 16:03
<b>Pyrene</b>	<b>0.12</b>		<b>0.0057</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:03
Surr: 2-Fluorobiphenyl	70.3			12-100	%REC	1	4/7/2015 16:03
Surr: 4-Terphenyl-d14	103			25-137	%REC	1	4/7/2015 16:03
Surr: Nitrobenzene-d5	72.1			37-107	%REC	1	4/7/2015 16:03
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15		Analyst: <b>BG</b>
Benzene	U		0.014	0.034	mg/Kg-dry	1	4/7/2015 04:20
Ethylbenzene	U		0.013	0.034	mg/Kg-dry	1	4/7/2015 04:20
m,p-Xylene	U		0.026	0.068	mg/Kg-dry	1	4/7/2015 04:20
o-Xylene	U		0.014	0.034	mg/Kg-dry	1	4/7/2015 04:20
Toluene	U		0.013	0.034	mg/Kg-dry	1	4/7/2015 04:20
Xylenes, Total	U		0.040	0.10	mg/Kg-dry	1	4/7/2015 04:20
Surr: 1,2-Dichloroethane-d4	98.8			70-130	%REC	1	4/7/2015 04:20
Surr: 4-Bromofluorobenzene	96.5			70-130	%REC	1	4/7/2015 04:20
Surr: Dibromofluoromethane	82.8			70-130	%REC	1	4/7/2015 04:20
Surr: Toluene-d8	97.1			70-130	%REC	1	4/7/2015 04:20
<b>MOISTURE</b>							
			Method: <b>E160.3M</b>				Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE02) 20-22'  
**Collection Date:** 3/27/2015 10:20 AM

**Work Order:** 1504071  
**Lab ID:** 1504071-03  
**Matrix:** SOIL

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Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	12		0.025	0.050	% of sample	1	4/6/2015 14:25

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**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE03) 30-32'  
**Collection Date:** 3/27/2015 12:15 PM

**Work Order:** 1504071  
**Lab ID:** 1504071-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>6.0</b>		<b>1.5</b>	<b>4.6</b>	<b>mg/Kg-dry</b>	1	4/3/2015 20:47
Surr: 4-Terphenyl-d14	83.8			39-133	%REC	1	4/3/2015 20:47
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.4	2.8	mg/Kg-dry	1	4/2/2015 19:11
Surr: Toluene-d8	107			50-150	%REC	1	4/2/2015 19:11
<b>METALS BY ICP-MS</b>							
				Method: <b>SW6020A</b>		Prep: SW3050B / 4/3/15	Analyst: <b>ML</b>
<b>Arsenic</b>	<b>4.9</b>		<b>0.35</b>	<b>1.7</b>	<b>mg/Kg-dry</b>	4	4/4/2015 05:09
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/6/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0027	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Anthracene	U		0.0035	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Benzo(a)anthracene	U		0.0044	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Benzo(a)pyrene	U		0.0015	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Benzo(b)fluoranthene	U		0.0025	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Benzo(k)fluoranthene	U		0.0046	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Chrysene	U		0.0062	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Dibenzo(a,h)anthracene	U		0.0024	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Fluoranthene	U		0.0045	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Fluorene	U		0.0041	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Indeno(1,2,3-cd)pyrene	U		0.0046	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Naphthalene	U		0.0019	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Pyrene	U		0.0055	0.0073	mg/Kg-dry	1	4/7/2015 16:25
Surr: 2-Fluorobiphenyl	61.7			12-100	%REC	1	4/7/2015 16:25
Surr: 4-Terphenyl-d14	104			25-137	%REC	1	4/7/2015 16:25
Surr: Nitrobenzene-d5	66.7			37-107	%REC	1	4/7/2015 16:25
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>LSY</b>
Benzene	U		0.014	0.034	mg/Kg-dry	1	4/7/2015 21:53
Ethylbenzene	U		0.013	0.034	mg/Kg-dry	1	4/7/2015 21:53
m,p-Xylene	U		0.026	0.068	mg/Kg-dry	1	4/7/2015 21:53
o-Xylene	U		0.014	0.034	mg/Kg-dry	1	4/7/2015 21:53
Toluene	U		0.013	0.034	mg/Kg-dry	1	4/7/2015 21:53
Xylenes, Total	U		0.040	0.10	mg/Kg-dry	1	4/7/2015 21:53
Surr: 1,2-Dichloroethane-d4	108			70-130	%REC	1	4/7/2015 21:53
Surr: 4-Bromofluorobenzene	95.5			70-130	%REC	1	4/7/2015 21:53
Surr: Dibromofluoromethane	87.3			70-130	%REC	1	4/7/2015 21:53
Surr: Toluene-d8	94.1			70-130	%REC	1	4/7/2015 21:53
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITE03) 30-32'  
**Collection Date:** 3/27/2015 12:15 PM

**Work Order:** 1504071  
**Lab ID:** 1504071-04  
**Matrix:** SOIL

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Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	12		0.025	0.050	% of sample	1	4/6/2015 14:25

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**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28  
**Sample ID:** 20150327-C28 (PITN01) 30-32'  
**Collection Date:** 3/27/2015 01:10 PM

**Work Order:** 1504071  
**Lab ID:** 1504071-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: SW8015M		Prep: SW3541 / 4/3/15	Analyst: IT
<b>DRO (C10-C28)</b>	<b>74</b>		<b>1.5</b>	<b>4.4</b>	<b>mg/Kg-dry</b>	1	4/4/2015 03:17
Surr: 4-Terphenyl-d14	86.1			39-133	%REC	1	4/4/2015 03:17
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: SW8015D		Prep: SW5035 / 4/1/15	Analyst: IT
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/2/2015 19:37
Surr: Toluene-d8	108			50-150	%REC	1	4/2/2015 19:37
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: SW846 8270D		Prep: SW3541 / 4/6/15	Analyst: RS
Acenaphthene	U		0.0027	0.0071	mg/Kg-dry	1	4/7/2015 16:48
<b>Anthracene</b>	<b>0.0071</b>	J	<b>0.0034</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Benzo(a)anthracene</b>	<b>0.047</b>		<b>0.0043</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Benzo(a)pyrene</b>	<b>0.038</b>		<b>0.0015</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Benzo(b)fluoranthene</b>	<b>0.055</b>		<b>0.0024</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Benzo(k)fluoranthene</b>	<b>0.021</b>		<b>0.0044</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Chrysene</b>	<b>0.058</b>		<b>0.0060</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
Dibenzo(a,h)anthracene	U		0.0023	0.0071	mg/Kg-dry	1	4/7/2015 16:48
<b>Fluoranthene</b>	<b>0.10</b>		<b>0.0043</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Fluorene</b>	<b>0.022</b>		<b>0.0039</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
<b>Indeno(1,2,3-cd)pyrene</b>	<b>0.023</b>		<b>0.0044</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
Naphthalene	U		0.0018	0.0071	mg/Kg-dry	1	4/7/2015 16:48
<b>Pyrene</b>	<b>0.066</b>		<b>0.0054</b>	<b>0.0071</b>	<b>mg/Kg-dry</b>	1	4/7/2015 16:48
Surr: 2-Fluorobiphenyl	68.2			12-100	%REC	1	4/7/2015 16:48
Surr: 4-Terphenyl-d14	111			25-137	%REC	1	4/7/2015 16:48
Surr: Nitrobenzene-d5	76.2			37-107	%REC	1	4/7/2015 16:48
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: SW8260B		Prep: SW5035 / 4/1/15	Analyst: BG
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/8/2015 12:00
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/8/2015 12:00
m,p-Xylene	U		0.024	0.064	mg/Kg-dry	1	4/8/2015 12:00
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/8/2015 12:00
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/8/2015 12:00
Xylenes, Total	U		0.038	0.097	mg/Kg-dry	1	4/8/2015 12:00
Surr: 1,2-Dichloroethane-d4	96.4			70-130	%REC	1	4/8/2015 12:00
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	4/8/2015 12:00
Surr: Dibromofluoromethane	91.6			70-130	%REC	1	4/8/2015 12:00
Surr: Toluene-d8	97.3			70-130	%REC	1	4/8/2015 12:00
<b>MOISTURE</b>							
				Method: E160.3M			Analyst: EVB
<b>Moisture</b>	<b>7.0</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504071  
**Project:** C28

**QC BATCH REPORT**

Batch ID: **69392** Instrument ID **GC8** Method: **SW8015M**

<b>MBLK</b>		Sample ID: <b>DBLKS1-69392-69392</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 06:47 PM</b>		
Client ID:		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211327</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.774	0	2	0	88.7	39-133	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-69392-69392</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 07:17 PM</b>		
Client ID:		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211329</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	174.6	5.0	200	0	87.3	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.488	0	2	0	74.4	39-133	0			

<b>MS</b>		Sample ID: <b>1504071-04A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 07:47 PM</b>		
Client ID: <b>20150327-C28 (PITE03) 30-32'</b>		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211332</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	290.2	7.9	316.3	5.307	90	48-110	0			
<i>Surr: 4-Terphenyl-d14</i>	2.445	0	3.163	0	77.3	39-133	0			

<b>MSD</b>		Sample ID: <b>1504071-04A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 08:17 PM</b>		
Client ID: <b>20150327-C28 (PITE03) 30-32'</b>		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211334</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	279.4	8.3	330	5.307	83.1	48-110	290.2	3.77	30	
<i>Surr: 4-Terphenyl-d14</i>	2.39	0	3.3	0	72.4	39-133	2.445	2.28	30	

**The following samples were analyzed in this batch:**

1504071-01B	1504071-02A	1504071-03B
1504071-04A	1504071-05A	

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: **69334** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69334-69334</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 02:35 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3207175</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5831	0	5000	0	117	50-150	0			

LCS		Sample ID: <b>LCS-69334-69334</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 02:10 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3207174</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	437000	2,500	500000	0	87.4	70-130	0			
<i>Surr: Toluene-d8</i>	4716	0	5000	0	94.3	50-150	0			

MS		Sample ID: <b>1504059-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 08:02 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208309</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	451900	2,500	500000	0	90.4	70-130	0			
<i>Surr: Toluene-d8</i>	4316	0	5000	0	86.3	50-150	0			

MSD		Sample ID: <b>1504059-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 08:27 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208310</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	442500	2,500	500000	0	88.5	70-130	451900	2.09	30	
<i>Surr: Toluene-d8</i>	4154	0	5000	0	83.1	50-150	4316	3.8	30	

The following samples were analyzed in this batch:

1504071-01A	1504071-02A	1504071-03A
1504071-04A	1504071-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: **69360** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK		Sample ID: <b>MBLK-69360-69360</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 06:02 PM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>			SeqNo: <b>3209860</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic U 0.25

LCS		Sample ID: <b>LCS-69360-69360</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 06:08 PM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>			SeqNo: <b>3209861</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 4.516 0.25 5 0 90.3 80-120 0

MS		Sample ID: <b>1504054-13AMS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 06:44 PM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>			SeqNo: <b>3209867</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 8.31 0.39 7.862 1.693 84.2 75-125 0

MSD		Sample ID: <b>1504054-13AMSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 07:09 PM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>			SeqNo: <b>3209871</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 8.505 0.40 7.911 1.693 86.1 75-125 8.31 2.32 25

The following samples were analyzed in this batch: 1504071-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: **69400** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK		Sample ID: <b>MBLK-69400-69400</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/4/2015 03:43 AM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209953</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic U 0.25

LCS		Sample ID: <b>LCS-69400-69400</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/4/2015 03:49 AM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209954</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 4.404 0.25 5 0 88.1 80-120 0

MS		Sample ID: <b>1504164-01AMS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/4/2015 06:59 AM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209983</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 6.818 0.37 7.353 0.173 90.4 75-125 0

MSD		Sample ID: <b>1504164-01AMSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/4/2015 07:05 AM</b>		
Client ID:		Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209984</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 6.611 0.36 7.215 0.173 89.2 75-125 6.818 3.09 25

The following samples were analyzed in this batch: 1504071-03B 1504071-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: 69449 Instrument ID SVMS5 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-69449-69449				Units: µg/Kg		Analysis Date: 4/6/2015 08:58 PM		
Client ID:		Run ID: SVMS5_150406A		SeqNo: 3214458		Prep Date: 4/6/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
Surr: 2-Fluorobiphenyl	913.7	0	1667	0	54.8	12-100	0			
Surr: 4-Terphenyl-d14	1760	0	1667	0	106	25-137	0			
Surr: Nitrobenzene-d5	948.3	0	1667	0	56.9	37-107	0			

LCS		Sample ID: SLCSS1-69449-69449				Units: µg/Kg		Analysis Date: 4/6/2015 09:20 PM		
Client ID:		Run ID: SVMS5_150406A		SeqNo: 3214459		Prep Date: 4/6/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	479	6.7	666.7	0	71.8	45-110	0			
Anthracene	606	6.7	666.7	0	90.9	55-105	0			
Benzo(a)anthracene	586	6.7	666.7	0	87.9	50-110	0			
Benzo(a)pyrene	573	6.7	666.7	0	85.9	50-110	0			
Benzo(b)fluoranthene	567	6.7	666.7	0	85	45-115	0			
Benzo(k)fluoranthene	592	6.7	666.7	0	88.8	45-115	0			
Chrysene	573.7	6.7	666.7	0	86	55-110	0			
Dibenzo(a,h)anthracene	552.7	6.7	666.7	0	82.9	40-125	0			
Fluoranthene	570	6.7	666.7	0	85.5	55-115	0			
Fluorene	503.3	6.7	666.7	0	75.5	50-110	0			
Indeno(1,2,3-cd)pyrene	539	6.7	666.7	0	80.8	40-120	0			
Naphthalene	460.3	6.7	666.7	0	69	40-105	0			
Pyrene	656	6.7	666.7	0	98.4	45-125	0			
Surr: 2-Fluorobiphenyl	1043	0	1667	0	62.6	12-100	0			
Surr: 4-Terphenyl-d14	1757	0	1667	0	105	25-137	0			
Surr: Nitrobenzene-d5	1101	0	1667	0	66.1	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: 69449 Instrument ID SVMS5 Method: SW846 8270D

MS				Sample ID: 1504064-18C MS			Units: µg/Kg		Analysis Date: 4/7/2015 01:59 AM			
Client ID:				Run ID: SVMS5_150406A			SeqNo: 3214460		Prep Date: 4/6/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Acenaphthene	1019	13	1306	0	78	45-110	0					
Anthracene	1192	13	1306	0	91.2	55-105	0					
Benzo(a)anthracene	1138	13	1306	0	87.1	50-110	0					
Benzo(a)pyrene	1129	13	1306	0	86.4	50-110	0					
Benzo(b)fluoranthene	1180	13	1306	0	90.3	45-115	0					
Benzo(k)fluoranthene	1157	13	1306	0	88.6	45-115	0					
Chrysene	1161	13	1306	0	88.9	55-110	0					
Dibenzo(a,h)anthracene	1098	13	1306	0	84	40-125	0					
Fluoranthene	1095	13	1306	0	83.8	55-115	0					
Fluorene	1088	13	1306	0	83.3	50-110	0					
Indeno(1,2,3-cd)pyrene	1069	13	1306	0	81.8	40-120	0					
Naphthalene	967.4	13	1306	0	74	40-105	0					
Pyrene	1307	13	1306	0	100	45-125	0					
Surr: 2-Fluorobiphenyl	2163	0	3266	0	66.2	12-100	0					
Surr: 4-Terphenyl-d14	3311	0	3266	0	101	25-137	0					
Surr: Nitrobenzene-d5	2341	0	3266	0	71.7	37-107	0					

MSD				Sample ID: 1504064-18C MSD			Units: µg/Kg		Analysis Date: 4/7/2015 02:21 AM			
Client ID:				Run ID: SVMS5_150406A			SeqNo: 3214461		Prep Date: 4/6/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Acenaphthene	1008	13	1259	0	80	45-110	1019	1.07	30			
Anthracene	1231	13	1259	0	97.7	55-105	1192	3.21	30			
Benzo(a)anthracene	1172	13	1259	0	93	50-110	1138	2.94	30			
Benzo(a)pyrene	1170	13	1259	0	92.9	50-110	1129	3.58	30			
Benzo(b)fluoranthene	1208	13	1259	0	95.9	45-115	1180	2.29	30			
Benzo(k)fluoranthene	1203	13	1259	0	95.5	45-115	1157	3.83	30			
Chrysene	1205	13	1259	0	95.7	55-110	1161	3.7	30			
Dibenzo(a,h)anthracene	1131	13	1259	0	89.8	40-125	1098	2.95	30			
Fluoranthene	1050	13	1259	0	83.4	55-115	1095	4.15	30			
Fluorene	1091	13	1259	0	86.6	50-110	1088	0.217	30			
Indeno(1,2,3-cd)pyrene	1093	13	1259	0	86.8	40-120	1069	2.2	30			
Naphthalene	954	13	1259	0	75.7	40-105	967.4	1.4	30			
Pyrene	1329	13	1259	0	106	45-125	1307	1.68	30			
Surr: 2-Fluorobiphenyl	2186	0	3148	0	69.4	12-100	2163	1.05	40			
Surr: 4-Terphenyl-d14	3457	0	3148	0	110	25-137	3311	4.31	40			
Surr: Nitrobenzene-d5	2293	0	3148	0	72.8	37-107	2341	2.06	40			

The following samples were analyzed in this batch:

1504071-01B	1504071-02A	1504071-03B
1504071-04A	1504071-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.

# QC BATCH REPORT

Work Order: 1504071

Project: C28

Batch ID: 69261

Instrument ID VMS6

Method: SW8260B

MBLK		Sample ID: MBLK-69261-69261				Units: µg/Kg		Analysis Date: 4/1/2015 06:55 PM		
Client ID:		Run ID: VMS6_150401A			SeqNo: 3206777		Prep Date: 3/31/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	1042	0	1000	0	104	70-130	0			
Surr: 4-Bromofluorobenzene	1001	0	1000	0	100	70-130	0			
Surr: Dibromofluoromethane	903.5	0	1000	0	90.4	70-130	0			
Surr: Toluene-d8	1060	0	1000	0	106	70-130	0			

LCS		Sample ID: LCS-69261-69261				Units: µg/Kg		Analysis Date: 4/1/2015 05:31 PM		
Client ID:		Run ID: VMS6_150401A			SeqNo: 3206774		Prep Date: 3/31/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	960.5	30	1000	0	96	75-125	0			
Ethylbenzene	1066	30	1000	0	107	75-125	0			
m,p-Xylene	2144	60	2000	0	107	80-125	0			
o-Xylene	1054	30	1000	0	105	75-125	0			
Toluene	1014	30	1000	0	101	70-125	0			
Xylenes, Total	3199	90	3000	0	107	75-125	0			
Surr: 1,2-Dichloroethane-d4	1009	0	1000	0	101	70-130	0			
Surr: 4-Bromofluorobenzene	1016	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	1007	0	1000	0	101	70-130	0			
Surr: Toluene-d8	1061	0	1000	0	106	70-130	0			

MS		Sample ID: 1504071-05A MS				Units: µg/Kg		Analysis Date: 4/8/2015 12:32 PM		
Client ID: 20150327-C28 (PITN01) 30-32'		Run ID: VMS7_150407B			SeqNo: 3216367		Prep Date: 4/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1008	30	1000	0	101	75-125	0			
Ethylbenzene	982.5	30	1000	0	98.2	75-125	0			
m,p-Xylene	1950	60	2000	0	97.5	80-125	0			
o-Xylene	956.5	30	1000	0	95.6	75-125	0			
Toluene	976	30	1000	0	97.6	70-125	0			
Xylenes, Total	2906	90	3000	0	96.9	75-125	0			
Surr: 1,2-Dichloroethane-d4	951	0	1000	0	95.1	70-130	0			
Surr: 4-Bromofluorobenzene	1038	0	1000	0	104	70-130	0			
Surr: Dibromofluoromethane	944	0	1000	0	94.4	70-130	0			
Surr: Toluene-d8	968.5	0	1000	0	96.8	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: 69261 Instrument ID VMS6 Method: SW8260B

MSD		Sample ID: 1504071-05A MSD				Units: µg/Kg		Analysis Date: 4/8/2015 12:58 PM		
Client ID: 20150327-C28 (PITN01) 30-32'		Run ID: VMS7_150407B				SeqNo: 3216368		Prep Date: 4/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1002	30	1000	0	100	75-125	1008	0.647	30	
Ethylbenzene	986	30	1000	0	98.6	75-125	982.5	0.356	30	
m,p-Xylene	1963	60	2000	0	98.2	80-125	1950	0.664	30	
o-Xylene	961.5	30	1000	0	96.2	75-125	956.5	0.521	30	
Toluene	979	30	1000	0	97.9	70-125	976	0.307	30	
Xylenes, Total	2924	90	3000	0	97.5	75-125	2906	0.617	30	
Surr: 1,2-Dichloroethane-d4	948.5	0	1000	0	94.8	70-130	951	0.263	30	
Surr: 4-Bromofluorobenzene	1013	0	1000	0	101	70-130	1038	2.49	30	
Surr: Dibromofluoromethane	936.5	0	1000	0	93.6	70-130	944	0.798	30	
Surr: Toluene-d8	976	0	1000	0	97.6	70-130	968.5	0.771	30	

The following samples were analyzed in this batch:

1504071-01A	1504071-02A	1504071-03A
1504071-04A	1504071-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504071  
 Project: C28

# QC BATCH REPORT

Batch ID: **R160706** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: <b>WBLKS-R160706</b>				Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>		
Client ID:		Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213923</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture U 0.050

LCS		Sample ID: <b>LCS-R160706</b>				Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>		
Client ID:		Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213922</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: <b>1504063-01B DUP</b>				Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>		
Client ID:		Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213907</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 3.48 0.050 0 0 0 3.59 3.11 20

DUP		Sample ID: <b>1504071-01B DUP</b>				Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>		
Client ID: <b>20150327-C28 (PITE01) 25-27'</b>		Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213915</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 14.44 0.050 0 0 0 14.9 3.14 20

The following samples were analyzed in this batch:

1504071-01B	1504071-02A	1504071-03B
1504071-04A	1504071-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



3/30/2015

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Nick Martinez  
ALS Environmental  
127 E. 1st Street

Origin ID: RILA



J151215022303uv

Ship Date: 30MAR15  
ActWgt: 41.0 LB  
CAD: 2264840/NET3610

Dims: 14 X 28 X 15 IN

PARACHUTE, CO 81635

Delivery Address Bar Code



SHIP TO: (616) 399-6070

BILL SENDER

sample receiving  
ALS Laboratory Group  
3352 128TH AVE

HOLLAND, MI 49424

Ref # 033015-2  
Invoice #  
PO # Parachute  
Dept #

2 of 2

TUE - 31 MAR 10:30A  
PRIORITY OVERNIGHT

MPS# 7732 5169 3862

0263

Metr# 7732 5169 3667

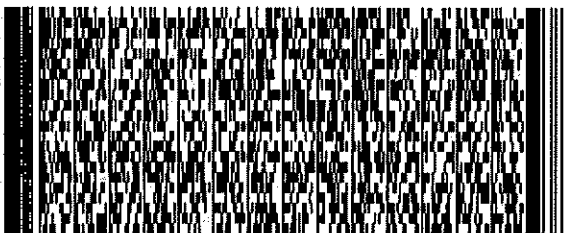
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08-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28 Pit Assessment 3.30.15**

Work Order: **1504061**

Dear Christopher,

ALS Environmental received 5 samples on 01-Apr-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 20.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS

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**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Work Order:** 1504061

**Work Order Sample Summary**

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<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504061-01	20150330-C28 (PITN02) 25-32'	Soil		3/30/2015 09:45	4/1/2015 10:00	<input type="checkbox"/>
1504061-02	20150330-C28 (PITN03) 15-17'	Soil		3/30/2015 10:45	4/1/2015 10:00	<input type="checkbox"/>
1504061-03	20150330-C28 (PITW03) 23-25'	Soil		3/30/2015 13:15	4/1/2015 10:00	<input type="checkbox"/>
1504061-04	20150330-C28 (PITW04) 15-17'	Soil		3/30/2015 14:10	4/1/2015 10:00	<input type="checkbox"/>
1504061-05	20150330-C28 (PITW04) 20-22'	Soil		3/30/2015 14:20	4/1/2015 10:00	<input type="checkbox"/>

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**WorkOrder:** 1504061

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

# ALS Group USA, Corp

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Sample ID:** 20150330-C28 (PITN02) 25-32'  
**Collection Date:** 3/30/2015 09:45 AM

**Work Order:** 1504061  
**Lab ID:** 1504061-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>13</b>		<b>1.4</b>	<b>4.2</b>	<b>mg/Kg-dry</b>	1	4/3/2015 22:47
Surr: 4-Terphenyl-d14	78.1			39-133	%REC	1	4/3/2015 22:47
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.6	mg/Kg-dry	1	4/2/2015 15:25
Surr: Toluene-d8	110			50-150	%REC	1	4/2/2015 15:25
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/3/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0025	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Anthracene	U		0.0033	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Benzo(a)anthracene	U		0.0041	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Benzo(a)pyrene	U		0.0014	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Benzo(b)fluoranthene	U		0.0023	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Benzo(k)fluoranthene	U		0.0042	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Chrysene	U		0.0057	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Dibenzo(a,h)anthracene	U		0.0022	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Fluoranthene	U		0.0041	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Fluorene	U		0.0038	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Indeno(1,2,3-cd)pyrene	U		0.0042	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Naphthalene	U		0.0018	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Pyrene	U		0.0051	0.0067	mg/Kg-dry	1	4/4/2015 20:26
Surr: 2-Fluorobiphenyl	57.4			12-100	%REC	1	4/4/2015 20:26
Surr: 4-Terphenyl-d14	106			25-137	%REC	1	4/4/2015 20:26
Surr: Nitrobenzene-d5	47.6			37-107	%REC	1	4/4/2015 20:26
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>BG</b>
Benzene	U		0.013	0.031	mg/Kg-dry	1	4/7/2015 04:46
Ethylbenzene	U		0.012	0.031	mg/Kg-dry	1	4/7/2015 04:46
m,p-Xylene	U		0.024	0.063	mg/Kg-dry	1	4/7/2015 04:46
o-Xylene	U		0.013	0.031	mg/Kg-dry	1	4/7/2015 04:46
Toluene	U		0.012	0.031	mg/Kg-dry	1	4/7/2015 04:46
Xylenes, Total	U		0.037	0.094	mg/Kg-dry	1	4/7/2015 04:46
Surr: 1,2-Dichloroethane-d4	99.6			70-130	%REC	1	4/7/2015 04:46
Surr: 4-Bromofluorobenzene	93.8			70-130	%REC	1	4/7/2015 04:46
Surr: Dibromofluoromethane	86.6			70-130	%REC	1	4/7/2015 04:46
Surr: Toluene-d8	98.8			70-130	%REC	1	4/7/2015 04:46
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>4.0</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Sample ID:** 20150330-C28 (PITN03) 15-17'  
**Collection Date:** 3/30/2015 10:45 AM

**Work Order:** 1504061  
**Lab ID:** 1504061-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>17</b>		<b>1.5</b>	<b>4.5</b>	<b>mg/Kg-dry</b>	1	4/3/2015 23:17
Surr: 4-Terphenyl-d14	67.8			39-133	%REC	1	4/3/2015 23:17
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/2/2015 15:50
Surr: Toluene-d8	107			50-150	%REC	1	4/2/2015 15:50
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/3/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0027	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Anthracene	U		0.0035	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Benzo(a)anthracene	U		0.0043	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Benzo(a)pyrene	U		0.0015	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Benzo(b)fluoranthene	U		0.0024	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Benzo(k)fluoranthene	U		0.0045	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Chrysene	U		0.0060	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Dibenzo(a,h)anthracene	U		0.0023	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Fluoranthene	U		0.0044	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Fluorene	U		0.0040	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Indeno(1,2,3-cd)pyrene	U		0.0045	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Naphthalene	U		0.0019	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Pyrene	U		0.0054	0.0072	mg/Kg-dry	1	4/4/2015 20:49
Surr: 2-Fluorobiphenyl	59.4			12-100	%REC	1	4/4/2015 20:49
Surr: 4-Terphenyl-d14	85.5			25-137	%REC	1	4/4/2015 20:49
Surr: Nitrobenzene-d5	43.8			37-107	%REC	1	4/4/2015 20:49
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>BG</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/7/2015 05:12
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/7/2015 05:12
m,p-Xylene	U		0.025	0.065	mg/Kg-dry	1	4/7/2015 05:12
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/7/2015 05:12
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/7/2015 05:12
Xylenes, Total	U		0.038	0.097	mg/Kg-dry	1	4/7/2015 05:12
Surr: 1,2-Dichloroethane-d4	100			70-130	%REC	1	4/7/2015 05:12
Surr: 4-Bromofluorobenzene	97.6			70-130	%REC	1	4/7/2015 05:12
Surr: Dibromofluoromethane	83.8			70-130	%REC	1	4/7/2015 05:12
Surr: Toluene-d8	101			70-130	%REC	1	4/7/2015 05:12
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>7.4</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Sample ID:** 20150330-C28 (PITW03) 23-25'  
**Collection Date:** 3/30/2015 01:15 PM

**Work Order:** 1504061  
**Lab ID:** 1504061-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>6.2</b>		<b>1.4</b>	<b>4.3</b>	<b>mg/Kg-dry</b>	1	4/4/2015 12:17
Surr: 4-Terphenyl-d14	82.8			39-133	%REC	1	4/4/2015 12:17
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.6	mg/Kg-dry	1	4/2/2015 16:41
Surr: Toluene-d8	117			50-150	%REC	1	4/2/2015 16:41
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/3/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Anthracene	U		0.0034	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Benzo(a)anthracene	U		0.0042	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Benzo(a)pyrene	U		0.0015	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Benzo(b)fluoranthene	U		0.0024	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Benzo(k)fluoranthene	U		0.0043	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Chrysene	U		0.0058	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Dibenzo(a,h)anthracene	U		0.0023	0.0069	mg/Kg-dry	1	4/4/2015 21:11
<b>Fluoranthene</b>	<b>0.0059</b>	<b>J</b>	<b>0.0043</b>	<b>0.0069</b>	<b>mg/Kg-dry</b>	1	4/4/2015 21:11
Fluorene	U		0.0039	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Indeno(1,2,3-cd)pyrene	U		0.0043	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Naphthalene	U		0.0018	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Pyrene	U		0.0053	0.0069	mg/Kg-dry	1	4/4/2015 21:11
Surr: 2-Fluorobiphenyl	52.5			12-100	%REC	1	4/4/2015 21:11
Surr: 4-Terphenyl-d14	97.6			25-137	%REC	1	4/4/2015 21:11
Surr: Nitrobenzene-d5	37.8			37-107	%REC	1	4/4/2015 21:11
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>BG</b>
Benzene	U		0.013	0.031	mg/Kg-dry	1	4/7/2015 05:38
Ethylbenzene	U		0.012	0.031	mg/Kg-dry	1	4/7/2015 05:38
m,p-Xylene	U		0.024	0.063	mg/Kg-dry	1	4/7/2015 05:38
o-Xylene	U		0.013	0.031	mg/Kg-dry	1	4/7/2015 05:38
Toluene	U		0.012	0.031	mg/Kg-dry	1	4/7/2015 05:38
Xylenes, Total	U		0.037	0.094	mg/Kg-dry	1	4/7/2015 05:38
Surr: 1,2-Dichloroethane-d4	98.0			70-130	%REC	1	4/7/2015 05:38
Surr: 4-Bromofluorobenzene	97.4			70-130	%REC	1	4/7/2015 05:38
Surr: Dibromofluoromethane	83.9			70-130	%REC	1	4/7/2015 05:38
Surr: Toluene-d8	99.0			70-130	%REC	1	4/7/2015 05:38
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>4.3</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Sample ID:** 20150330-C28 (PITW04) 15-17'  
**Collection Date:** 3/30/2015 02:10 PM

**Work Order:** 1504061  
**Lab ID:** 1504061-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>8.3</b>		<b>1.4</b>	<b>4.3</b>	<b>mg/Kg-dry</b>	1	4/4/2015 12:47
Surr: 4-Terphenyl-d14	86.9			39-133	%REC	1	4/4/2015 12:47
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.6	mg/Kg-dry	1	4/2/2015 17:06
Surr: Toluene-d8	112			50-150	%REC	1	4/2/2015 17:06
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/6/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Anthracene	U		0.0033	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Benzo(a)anthracene	U		0.0042	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Benzo(a)pyrene	U		0.0015	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Benzo(b)fluoranthene	U		0.0023	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Benzo(k)fluoranthene	U		0.0043	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Chrysene	U		0.0058	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Dibenzo(a,h)anthracene	U		0.0022	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Fluoranthene	U		0.0042	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Fluorene	U		0.0038	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Indeno(1,2,3-cd)pyrene	U		0.0043	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Naphthalene	U		0.0018	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Pyrene	U		0.0052	0.0069	mg/Kg-dry	1	4/7/2015 03:29
Surr: 2-Fluorobiphenyl	67.8			12-100	%REC	1	4/7/2015 03:29
Surr: 4-Terphenyl-d14	106			25-137	%REC	1	4/7/2015 03:29
Surr: Nitrobenzene-d5	67.4			37-107	%REC	1	4/7/2015 03:29
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>BG</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/7/2015 06:04
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/7/2015 06:04
m,p-Xylene	U		0.024	0.064	mg/Kg-dry	1	4/7/2015 06:04
o-Xylene	U		0.013	0.032	mg/Kg-dry	1	4/7/2015 06:04
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/7/2015 06:04
Xylenes, Total	U		0.038	0.095	mg/Kg-dry	1	4/7/2015 06:04
Surr: 1,2-Dichloroethane-d4	97.3			70-130	%REC	1	4/7/2015 06:04
Surr: 4-Bromofluorobenzene	94.3			70-130	%REC	1	4/7/2015 06:04
Surr: Dibromofluoromethane	82.7			70-130	%REC	1	4/7/2015 06:04
Surr: Toluene-d8	98.5			70-130	%REC	1	4/7/2015 06:04
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>5.5</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 08-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Sample ID:** 20150330-C28 (PITW04) 20-22'  
**Collection Date:** 3/30/2015 02:20 PM

**Work Order:** 1504061  
**Lab ID:** 1504061-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/3/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>6.7</b>		<b>1.4</b>	<b>4.3</b>	<b>mg/Kg-dry</b>	1	4/4/2015 01:17
Surr: 4-Terphenyl-d14	82.9			39-133	%REC	1	4/4/2015 01:17
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/1/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.6	mg/Kg-dry	1	4/2/2015 17:31
Surr: Toluene-d8	107			50-150	%REC	1	4/2/2015 17:31
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/6/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Anthracene	U		0.0034	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Benzo(a)anthracene	U		0.0042	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Benzo(a)pyrene	U		0.0015	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Benzo(b)fluoranthene	U		0.0024	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Benzo(k)fluoranthene	U		0.0043	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Chrysene	U		0.0059	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Dibenzo(a,h)anthracene	U		0.0023	0.0070	mg/Kg-dry	1	4/7/2015 03:51
<b>Fluoranthene</b>	<b>0.0063</b>	<b>J</b>	<b>0.0043</b>	<b>0.0070</b>	<b>mg/Kg-dry</b>	1	4/7/2015 03:51
Fluorene	U		0.0039	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Indeno(1,2,3-cd)pyrene	U		0.0043	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Naphthalene	U		0.0018	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Pyrene	U		0.0053	0.0070	mg/Kg-dry	1	4/7/2015 03:51
Surr: 2-Fluorobiphenyl	61.4			12-100	%REC	1	4/7/2015 03:51
Surr: 4-Terphenyl-d14	101			25-137	%REC	1	4/7/2015 03:51
Surr: Nitrobenzene-d5	63.9			37-107	%REC	1	4/7/2015 03:51
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/1/15	Analyst: <b>BG</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/7/2015 06:30
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/7/2015 06:30
m,p-Xylene	U		0.024	0.063	mg/Kg-dry	1	4/7/2015 06:30
o-Xylene	U		0.013	0.032	mg/Kg-dry	1	4/7/2015 06:30
Toluene	U		0.012	0.032	mg/Kg-dry	1	4/7/2015 06:30
Xylenes, Total	U		0.037	0.095	mg/Kg-dry	1	4/7/2015 06:30
Surr: 1,2-Dichloroethane-d4	97.8			70-130	%REC	1	4/7/2015 06:30
Surr: 4-Bromofluorobenzene	94.2			70-130	%REC	1	4/7/2015 06:30
Surr: Dibromofluoromethane	82.8			70-130	%REC	1	4/7/2015 06:30
Surr: Toluene-d8	98.6			70-130	%REC	1	4/7/2015 06:30
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>4.8</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/6/2015 14:25

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504061  
**Project:** C28 Pit Assessment 3.30.15

**QC BATCH REPORT**

Batch ID: **69392** Instrument ID **GC8** Method: **SW8015M**

<b>MBLK</b>		Sample ID: <b>DBLKS1-69392-69392</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 06:47 PM</b>		
Client ID:		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211327</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.774	0	2	0	88.7	39-133	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-69392-69392</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 07:17 PM</b>		
Client ID:		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211329</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	174.6	5.0	200	0	87.3	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.488	0	2	0	74.4	39-133	0			

<b>MS</b>		Sample ID: <b>1504071-04A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 07:47 PM</b>		
Client ID:		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211332</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	290.2	7.9	316.3	5.307	90	48-110	0			
<i>Surr: 4-Terphenyl-d14</i>	2.445	0	3.163	0	77.3	39-133	0			

<b>MSD</b>		Sample ID: <b>1504071-04A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/3/2015 08:17 PM</b>		
Client ID:		Run ID: <b>GC8_150403A</b>		SeqNo: <b>3211334</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	279.4	8.3	330	5.307	83.1	48-110	290.2	3.77	30	
<i>Surr: 4-Terphenyl-d14</i>	2.39	0	3.3	0	72.4	39-133	2.445	2.28	30	

**The following samples were analyzed in this batch:**

1504061-01A	1504061-02A	1504061-03A
1504061-04A	1504061-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504061  
**Project:** C28 Pit Assessment 3.30.15

## QC BATCH REPORT

Batch ID: **69334**      Instrument ID **GC9**      Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69334-69334</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 02:35 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3207175</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5831	0	5000	0	117	50-150	0			

LCS		Sample ID: <b>LCS-69334-69334</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 02:10 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3207174</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	437000	2,500	500000	0	87.4	70-130	0			
<i>Surr: Toluene-d8</i>	4716	0	5000	0	94.3	50-150	0			

MS		Sample ID: <b>1504059-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 08:02 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208309</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	451900	2,500	500000	0	90.4	70-130	0			
<i>Surr: Toluene-d8</i>	4316	0	5000	0	86.3	50-150	0			

MSD		Sample ID: <b>1504059-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 08:27 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208310</b>		Prep Date: <b>4/1/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	442500	2,500	500000	0	88.5	70-130	451900	2.09	30	
<i>Surr: Toluene-d8</i>	4154	0	5000	0	83.1	50-150	4316	3.8	30	

The following samples were analyzed in this batch:

1504061-01A	1504061-02B	1504061-03B
1504061-04A	1504061-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504061  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **69391** Instrument ID **SVMS5** Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-69391-69391</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/4/2015 01:40 PM</b>		
Client ID:		Run ID: <b>SVMS5_150404A</b>		SeqNo: <b>3212234</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
<i>Surr: 2-Fluorobiphenyl</i>	1131	0	1667	0	67.8	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1696	0	1667	0	102	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1197	0	1667	0	71.8	37-107	0			

LCS		Sample ID: <b>SLCSS1-69391-69391</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/4/2015 02:03 PM</b>		
Client ID:		Run ID: <b>SVMS5_150404A</b>		SeqNo: <b>3212235</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	480	6.7	666.7	0	72	45-110	0			
Anthracene	596.7	6.7	666.7	0	89.5	55-105	0			
Benzo(a)anthracene	576.3	6.7	666.7	0	86.4	50-110	0			
Benzo(a)pyrene	556	6.7	666.7	0	83.4	50-110	0			
Benzo(b)fluoranthene	594	6.7	666.7	0	89.1	45-115	0			
Benzo(k)fluoranthene	643	6.7	666.7	0	96.4	45-115	0			
Chrysene	612.3	6.7	666.7	0	91.8	55-110	0			
Dibenzo(a,h)anthracene	522	6.7	666.7	0	78.3	40-125	0			
Fluoranthene	599.7	6.7	666.7	0	89.9	55-115	0			
Fluorene	528.7	6.7	666.7	0	79.3	50-110	0			
Indeno(1,2,3-cd)pyrene	415.3	6.7	666.7	0	62.3	40-120	0			
Naphthalene	476	6.7	666.7	0	71.4	40-105	0			
Pyrene	627	6.7	666.7	0	94	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1082	0	1667	0	64.9	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1674	0	1667	0	100	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1215	0	1667	0	72.9	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504061  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: 69391 Instrument ID SVMS5 Method: SW846 8270D

MS				Sample ID: 1504054-12A MS			Units: µg/Kg		Analysis Date: 4/4/2015 02:25 PM		
Client ID:		Run ID: SVMS5_150404A		SeqNo: 3212236		Prep Date: 4/3/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1057	13	1329	9.284	78.8	45-110	0				
Anthracene	1306	13	1329	4.974	97.9	55-105	0				
Benzo(a)anthracene	1408	13	1329	108.4	97.8	50-110	0				
Benzo(a)pyrene	1356	13	1329	105.8	94.1	50-110	0				
Benzo(b)fluoranthene	1504	13	1329	156.2	101	45-115	0				
Benzo(k)fluoranthene	1310	13	1329	53.38	94.5	45-115	0				
Chrysene	1446	13	1329	128.3	99.2	55-110	0				
Dibenzo(a,h)anthracene	1025	13	1329	13.93	76	40-125	0				
Fluoranthene	1809	13	1329	228.5	119	55-115	0			S	
Fluorene	1163	13	1329	8.289	86.9	50-110	0				
Indeno(1,2,3-cd)pyrene	1114	13	1329	75.6	78.2	40-120	0				
Naphthalene	1038	13	1329	0	78.1	40-105	0				
Pyrene	1771	13	1329	196.6	118	45-125	0				
Surr: 2-Fluorobiphenyl	2317	0	3322	0	69.7	12-100	0				
Surr: 4-Terphenyl-d14	3211	0	3322	0	96.7	25-137	0				
Surr: Nitrobenzene-d5	2650	0	3322	0	79.8	37-107	0				

MSD				Sample ID: 1504054-12A MSD			Units: µg/Kg		Analysis Date: 4/4/2015 02:48 PM		
Client ID:		Run ID: SVMS5_150404A		SeqNo: 3212237		Prep Date: 4/3/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1008	13	1308	9.284	76.3	45-110	1057	4.77	30		
Anthracene	1201	13	1308	4.974	91.4	55-105	1306	8.37	30		
Benzo(a)anthracene	1171	13	1308	108.4	81.2	50-110	1408	18.4	30		
Benzo(a)pyrene	1156	13	1308	105.8	80.3	50-110	1356	15.9	30		
Benzo(b)fluoranthene	1245	13	1308	156.2	83.2	45-115	1504	18.9	30		
Benzo(k)fluoranthene	1177	13	1308	53.38	85.9	45-115	1310	10.6	30		
Chrysene	1213	13	1308	128.3	82.9	55-110	1446	17.5	30		
Dibenzo(a,h)anthracene	1012	13	1308	13.93	76.3	40-125	1025	1.19	30		
Fluoranthene	1239	13	1308	228.5	77.3	55-115	1809	37.4	30	R	
Fluorene	1113	13	1308	8.289	84.5	50-110	1163	4.36	30		
Indeno(1,2,3-cd)pyrene	1019	13	1308	75.6	72.1	40-120	1114	8.94	30		
Naphthalene	920.1	13	1308	0	70.3	40-105	1038	12.1	30		
Pyrene	1368	13	1308	196.6	89.6	45-125	1771	25.7	30		
Surr: 2-Fluorobiphenyl	2184	0	3270	0	66.8	12-100	2317	5.89	40		
Surr: 4-Terphenyl-d14	3275	0	3270	0	100	25-137	3211	1.97	40		
Surr: Nitrobenzene-d5	2386	0	3270	0	73	37-107	2650	10.5	40		

The following samples were analyzed in this batch:

1504061-01A	1504061-02A	1504061-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504061  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: 69449 Instrument ID SVMS5 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-69449-69449				Units: µg/Kg		Analysis Date: 4/6/2015 08:58 PM		
Client ID:		Run ID: SVMS5_150406A		SeqNo: 3214458		Prep Date: 4/6/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
Surr: 2-Fluorobiphenyl	913.7	0	1667	0	54.8	12-100	0			
Surr: 4-Terphenyl-d14	1760	0	1667	0	106	25-137	0			
Surr: Nitrobenzene-d5	948.3	0	1667	0	56.9	37-107	0			

LCS		Sample ID: SLCSS1-69449-69449				Units: µg/Kg		Analysis Date: 4/6/2015 09:20 PM		
Client ID:		Run ID: SVMS5_150406A		SeqNo: 3214459		Prep Date: 4/6/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	479	6.7	666.7	0	71.8	45-110	0			
Anthracene	606	6.7	666.7	0	90.9	55-105	0			
Benzo(a)anthracene	586	6.7	666.7	0	87.9	50-110	0			
Benzo(a)pyrene	573	6.7	666.7	0	85.9	50-110	0			
Benzo(b)fluoranthene	567	6.7	666.7	0	85	45-115	0			
Benzo(k)fluoranthene	592	6.7	666.7	0	88.8	45-115	0			
Chrysene	573.7	6.7	666.7	0	86	55-110	0			
Dibenzo(a,h)anthracene	552.7	6.7	666.7	0	82.9	40-125	0			
Fluoranthene	570	6.7	666.7	0	85.5	55-115	0			
Fluorene	503.3	6.7	666.7	0	75.5	50-110	0			
Indeno(1,2,3-cd)pyrene	539	6.7	666.7	0	80.8	40-120	0			
Naphthalene	460.3	6.7	666.7	0	69	40-105	0			
Pyrene	656	6.7	666.7	0	98.4	45-125	0			
Surr: 2-Fluorobiphenyl	1043	0	1667	0	62.6	12-100	0			
Surr: 4-Terphenyl-d14	1757	0	1667	0	105	25-137	0			
Surr: Nitrobenzene-d5	1101	0	1667	0	66.1	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504061  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **69449** Instrument ID **SVMS5** Method: **SW846 8270D**

MS				Sample ID: <b>1504064-18C MS</b>			Units: <b>µg/Kg</b>		Analysis Date: <b>4/7/2015 01:59 AM</b>		
Client ID:		Run ID: <b>SVMS5_150406A</b>		SeqNo: <b>3214460</b>		Prep Date: <b>4/6/2015</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1019	13	1306	0	78	45-110	0				
Anthracene	1192	13	1306	0	91.2	55-105	0				
Benzo(a)anthracene	1138	13	1306	0	87.1	50-110	0				
Benzo(a)pyrene	1129	13	1306	0	86.4	50-110	0				
Benzo(b)fluoranthene	1180	13	1306	0	90.3	45-115	0				
Benzo(k)fluoranthene	1157	13	1306	0	88.6	45-115	0				
Chrysene	1161	13	1306	0	88.9	55-110	0				
Dibenzo(a,h)anthracene	1098	13	1306	0	84	40-125	0				
Fluoranthene	1095	13	1306	0	83.8	55-115	0				
Fluorene	1088	13	1306	0	83.3	50-110	0				
Indeno(1,2,3-cd)pyrene	1069	13	1306	0	81.8	40-120	0				
Naphthalene	967.4	13	1306	0	74	40-105	0				
Pyrene	1307	13	1306	0	100	45-125	0				
<i>Surr: 2-Fluorobiphenyl</i>	2163	0	3266	0	66.2	12-100	0				
<i>Surr: 4-Terphenyl-d14</i>	3311	0	3266	0	101	25-137	0				
<i>Surr: Nitrobenzene-d5</i>	2341	0	3266	0	71.7	37-107	0				

MSD				Sample ID: <b>1504064-18C MSD</b>			Units: <b>µg/Kg</b>		Analysis Date: <b>4/7/2015 02:21 AM</b>		
Client ID:		Run ID: <b>SVMS5_150406A</b>		SeqNo: <b>3214461</b>		Prep Date: <b>4/6/2015</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1008	13	1259	0	80	45-110	1019	1.07	30		
Anthracene	1231	13	1259	0	97.7	55-105	1192	3.21	30		
Benzo(a)anthracene	1172	13	1259	0	93	50-110	1138	2.94	30		
Benzo(a)pyrene	1170	13	1259	0	92.9	50-110	1129	3.58	30		
Benzo(b)fluoranthene	1208	13	1259	0	95.9	45-115	1180	2.29	30		
Benzo(k)fluoranthene	1203	13	1259	0	95.5	45-115	1157	3.83	30		
Chrysene	1205	13	1259	0	95.7	55-110	1161	3.7	30		
Dibenzo(a,h)anthracene	1131	13	1259	0	89.8	40-125	1098	2.95	30		
Fluoranthene	1050	13	1259	0	83.4	55-115	1095	4.15	30		
Fluorene	1091	13	1259	0	86.6	50-110	1088	0.217	30		
Indeno(1,2,3-cd)pyrene	1093	13	1259	0	86.8	40-120	1069	2.2	30		
Naphthalene	954	13	1259	0	75.7	40-105	967.4	1.4	30		
Pyrene	1329	13	1259	0	106	45-125	1307	1.68	30		
<i>Surr: 2-Fluorobiphenyl</i>	2186	0	3148	0	69.4	12-100	2163	1.05	40		
<i>Surr: 4-Terphenyl-d14</i>	3457	0	3148	0	110	25-137	3311	4.31	40		
<i>Surr: Nitrobenzene-d5</i>	2293	0	3148	0	72.8	37-107	2341	2.06	40		

The following samples were analyzed in this batch: 1504061-04A 1504061-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.

Work Order: 1504061

Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: 69261

Instrument ID VMS6

Method: SW8260B

MBLK		Sample ID: MBLK-69261-69261				Units: µg/Kg		Analysis Date: 4/1/2015 06:55 PM		
Client ID:		Run ID: VMS6_150401A		SeqNo: 3206777		Prep Date: 3/31/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	1042	0	1000	0	104	70-130	0			
Surr: 4-Bromofluorobenzene	1001	0	1000	0	100	70-130	0			
Surr: Dibromofluoromethane	903.5	0	1000	0	90.4	70-130	0			
Surr: Toluene-d8	1060	0	1000	0	106	70-130	0			

LCS		Sample ID: LCS-69261-69261				Units: µg/Kg		Analysis Date: 4/1/2015 05:31 PM		
Client ID:		Run ID: VMS6_150401A		SeqNo: 3206774		Prep Date: 3/31/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	960.5	30	1000	0	96	75-125	0			
Ethylbenzene	1066	30	1000	0	107	75-125	0			
m,p-Xylene	2144	60	2000	0	107	80-125	0			
o-Xylene	1054	30	1000	0	105	75-125	0			
Toluene	1014	30	1000	0	101	70-125	0			
Xylenes, Total	3199	90	3000	0	107	75-125	0			
Surr: 1,2-Dichloroethane-d4	1009	0	1000	0	101	70-130	0			
Surr: 4-Bromofluorobenzene	1016	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	1007	0	1000	0	101	70-130	0			
Surr: Toluene-d8	1061	0	1000	0	106	70-130	0			

MS		Sample ID: 1504071-05A MS				Units: µg/Kg		Analysis Date: 4/8/2015 12:32 PM		
Client ID:		Run ID: VMS7_150407B		SeqNo: 3216367		Prep Date: 4/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1008	30	1000	0	101	75-125	0			
Ethylbenzene	982.5	30	1000	0	98.2	75-125	0			
m,p-Xylene	1950	60	2000	0	97.5	80-125	0			
o-Xylene	956.5	30	1000	0	95.6	75-125	0			
Toluene	976	30	1000	0	97.6	70-125	0			
Xylenes, Total	2906	90	3000	0	96.9	75-125	0			
Surr: 1,2-Dichloroethane-d4	951	0	1000	0	95.1	70-130	0			
Surr: 4-Bromofluorobenzene	1038	0	1000	0	104	70-130	0			
Surr: Dibromofluoromethane	944	0	1000	0	94.4	70-130	0			
Surr: Toluene-d8	968.5	0	1000	0	96.8	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504061  
**Project:** C28 Pit Assessment 3.30.15

## QC BATCH REPORT

Batch ID: **69261**      Instrument ID **VMS6**      Method: **SW8260B**

MSD		Sample ID: 1504071-05A MSD				Units: µg/Kg		Analysis Date: 4/8/2015 12:58 PM		
Client ID:		Run ID: VMS7_150407B			SeqNo: 3216368		Prep Date: 4/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1002	30	1000	0	100	75-125	1008	0.647	30	
Ethylbenzene	986	30	1000	0	98.6	75-125	982.5	0.356	30	
m,p-Xylene	1963	60	2000	0	98.2	80-125	1950	0.664	30	
o-Xylene	961.5	30	1000	0	96.2	75-125	956.5	0.521	30	
Toluene	979	30	1000	0	97.9	70-125	976	0.307	30	
Xylenes, Total	2924	90	3000	0	97.5	75-125	2906	0.617	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	948.5	0	1000	0	94.8	70-130	951	0.263	30	
<i>Surr: 4-Bromofluorobenzene</i>	1013	0	1000	0	101	70-130	1038	2.49	30	
<i>Surr: Dibromofluoromethane</i>	936.5	0	1000	0	93.6	70-130	944	0.798	30	
<i>Surr: Toluene-d8</i>	976	0	1000	0	97.6	70-130	968.5	0.771	30	

The following samples were analyzed in this batch:

1504061-01A	1504061-02B	1504061-03B
1504061-04A	1504061-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504061  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **R160706** Instrument ID **MOIST** Method: **E160.3M**

<b>MBLK</b>	Sample ID: <b>WBLKS-R160706</b>		Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>				
Client ID:	Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213923</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

<b>LCS</b>	Sample ID: <b>LCS-R160706</b>		Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>				
Client ID:	Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213922</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

<b>DUP</b>	Sample ID: <b>1504063-01B DUP</b>		Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>				
Client ID:	Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213907</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 3.48 0.050 0 0 0 3.59 3.11 20

<b>DUP</b>	Sample ID: <b>1504071-01B DUP</b>		Units: % of sample			Analysis Date: <b>4/6/2015 02:25 PM</b>				
Client ID:	Run ID: <b>MOIST_150406A</b>		SeqNo: <b>3213915</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 14.44 0.050 0 0 0 14.9 3.14 20

The following samples were analyzed in this batch:

1504061-01A	1504061-02A	1504061-03A
1504061-04A	1504061-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



3/31/2015

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From: (616) 298-1033  
Nick Martinez  
ALS Environmental  
127 E. 1st Street

Origin ID: RILA



J151215022303W

Ship Date: 31MAR15  
ActWgt: 65.0 LB  
CAD: 2264840/NET3610

Dims: 24 X 15 X 15 IN

PARACHUTE, CO 81635

Delivery Address Bar Code



**SHIP TO: (616) 399-6878**  
**sample receiving**  
**ALS Laboratory Group**  
**3352 128TH AVE**

**BILL SENDER**

Ref # 033115-1  
Invoice #  
PO # Parachute  
Dept #

**HOLLAND, MI 49424**

2 of 2

**WED - 01 APR 10:30A**  
**PRIORITY OVERNIGHT**

MPS# 7732 6340 1610

0263

Metri# 7732 6340 1583

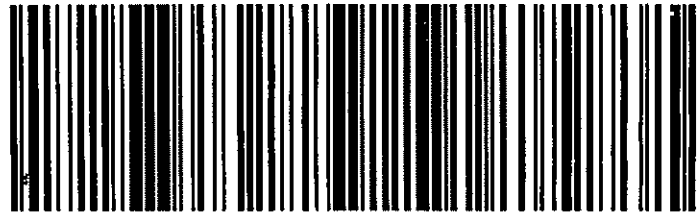
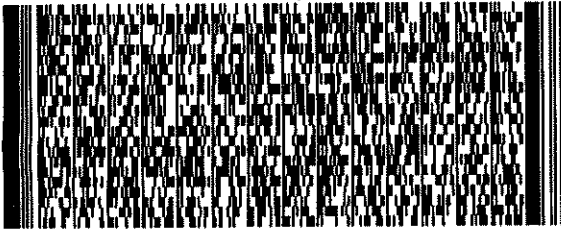
0201

**49424**

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09-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28 Pit Assessment 3.30.15**

Work Order: **1504128**

Dear Christopher,

ALS Environmental received 1 sample on 02-Apr-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 14.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

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**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Work Order:** 1504128

**Work Order Sample Summary**

---

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504128-01	20150330-C28 (PITSE01) 10-12.5'	Soil		3/30/2015 15:35	4/2/2015 10:00	<input type="checkbox"/>

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**WorkOrder:** 1504128

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

**ALS Group USA, Corp**

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.30.15  
**Sample ID:** 20150330-C28 (PITSE01) 10-12.5'  
**Collection Date:** 3/30/2015 03:35 PM

**Work Order:** 1504128  
**Lab ID:** 1504128-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: SW8015M		Prep: SW3541 / 4/7/15	Analyst: IT
<b>DRO (C10-C28)</b>	<b>540</b>		<b>1.6</b>	<b>4.7</b>	<b>mg/Kg-dry</b>	1	4/7/2015 23:51
Surr: 4-Terphenyl-d14	79.9			39-133	%REC	1	4/7/2015 23:51
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: SW8015D		Prep: SW5035 / 4/2/15	Analyst: IT
<b>GRO (C6-C10)</b>	<b>45</b>		<b>1.4</b>	<b>2.9</b>	<b>mg/Kg-dry</b>	1	4/3/2015 13:28
Surr: Toluene-d8	114			50-150	%REC	1	4/3/2015 13:28
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: SW846 8270D		Prep: SW3541 / 4/7/15	Analyst: RS
Acenaphthene	U		0.0028	0.0075	mg/Kg-dry	1	4/8/2015 19:10
<b>Anthracene</b>	<b>0.020</b>		<b>0.0036</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Benzo(a)anthracene</b>	<b>0.13</b>		<b>0.0046</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Benzo(a)pyrene</b>	<b>0.088</b>		<b>0.0016</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Benzo(b)fluoranthene</b>	<b>0.22</b>		<b>0.0026</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Benzo(k)fluoranthene</b>	<b>0.077</b>		<b>0.0047</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Chrysene</b>	<b>0.14</b>		<b>0.0063</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
Dibenzo(a,h)anthracene	U		0.0024	0.0075	mg/Kg-dry	1	4/8/2015 19:10
<b>Fluoranthene</b>	<b>0.17</b>		<b>0.0046</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Fluorene</b>	<b>0.097</b>		<b>0.0042</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Indeno(1,2,3-cd)pyrene</b>	<b>0.12</b>		<b>0.0047</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Naphthalene</b>	<b>0.21</b>		<b>0.0020</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
<b>Pyrene</b>	<b>0.10</b>		<b>0.0057</b>	<b>0.0075</b>	<b>mg/Kg-dry</b>	1	4/8/2015 19:10
Surr: 2-Fluorobiphenyl	59.8			12-100	%REC	1	4/8/2015 19:10
Surr: 4-Terphenyl-d14	107			25-137	%REC	1	4/8/2015 19:10
Surr: Nitrobenzene-d5	42.3			37-107	%REC	1	4/8/2015 19:10
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: SW8260B		Prep: SW5035 / 4/3/15	Analyst: BG
<b>Benzene</b>	<b>0.41</b>		<b>0.014</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/9/2015 12:50
<b>Ethylbenzene</b>	<b>0.071</b>		<b>0.013</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/9/2015 12:50
<b>m,p-Xylene</b>	<b>0.30</b>		<b>0.026</b>	<b>0.069</b>	<b>mg/Kg-dry</b>	1	4/9/2015 12:50
<b>o-Xylene</b>	<b>0.017</b>	J	<b>0.015</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/9/2015 12:50
<b>Toluene</b>	<b>0.036</b>		<b>0.013</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/9/2015 12:50
<b>Xylenes, Total</b>	<b>0.31</b>		<b>0.041</b>	<b>0.10</b>	<b>mg/Kg-dry</b>	1	4/9/2015 12:50
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	4/9/2015 12:50
Surr: 4-Bromofluorobenzene	104			70-130	%REC	1	4/9/2015 12:50
Surr: Dibromofluoromethane	94.4			70-130	%REC	1	4/9/2015 12:50
Surr: Toluene-d8	97.0			70-130	%REC	1	4/9/2015 12:50
<b>MOISTURE</b>							
				Method: E160.3M			Analyst: EVB
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/7/2015 14:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504128  
**Project:** C28 Pit Assessment 3.30.15

**QC BATCH REPORT**

Batch ID: **69507** Instrument ID **GC8** Method: **SW8015M**

<b>MBLK</b>		Sample ID: <b>DBLKS1-69507-69507</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 06:51 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215463</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.667	0	2	0	83.3	39-133	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-69507-69507</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 07:21 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215464</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	200	5.0	200	0	100	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.502	0	2	0	75.1	39-133	0			

<b>MS</b>		Sample ID: <b>1504129-04A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 07:51 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215465</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	321.3	8.2	328.6	0	97.8	48-110	0			
<i>Surr: 4-Terphenyl-d14</i>	2.387	0	3.286	0	72.6	39-133	0			

<b>MSD</b>		Sample ID: <b>1504129-04A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 08:21 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215466</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	304.1	8.2	326.5	0	93.1	48-110	321.3	5.52	30	
<i>Surr: 4-Terphenyl-d14</i>	2.3	0	3.265	0	70.4	39-133	2.387	3.71	30	

The following samples were analyzed in this batch: 1504128-01A

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504128  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **69379** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69379-69379</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 11:21 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208316</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5640	0	5000	0	113	50-150	0			

LCS		Sample ID: <b>LCS-69379-69379</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 10:56 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208315</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	428300	2,500	500000	0	85.7	70-130	0			
<i>Surr: Toluene-d8</i>	4659	0	5000	0	93.2	50-150	0			

MS		Sample ID: <b>1504126-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 12:36 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208330</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1643000	2,500	500000	1137000	101	70-130	0			
<i>Surr: Toluene-d8</i>	6315	0	5000	0	126	50-150	0			

MSD		Sample ID: <b>1504126-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 01:01 AM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208318</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1491000	2,500	500000	1137000	70.8	70-130	1643000	9.66	30	
<i>Surr: Toluene-d8</i>	6190	0	5000	0	124	50-150	6315	1.99	30	

The following samples were analyzed in this batch:

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504128  
**Project:** C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **69506**      Instrument ID **SVMS4**      Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-69506-69506</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:08 AM</b>		
Client ID:		Run ID: <b>SVMS4_150407A</b>		SeqNo: <b>3216213</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
<i>Surr: 2-Fluorobiphenyl</i>	1475	0	1667	0	88.5	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1971	0	1667	0	118	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1452	0	1667	0	87.1	37-107	0			

LCS		Sample ID: <b>SLCSS1-69506-69506</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:33 AM</b>		
Client ID:		Run ID: <b>SVMS4_150407A</b>		SeqNo: <b>3216215</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	479.3	6.7	666.7	0	71.9	45-110	0			
Anthracene	566	6.7	666.7	0	84.9	55-105	0			
Benzo(a)anthracene	574.7	6.7	666.7	0	86.2	50-110	0			
Benzo(a)pyrene	560.3	6.7	666.7	0	84	50-110	0			
Benzo(b)fluoranthene	534	6.7	666.7	0	80.1	45-115	0			
Benzo(k)fluoranthene	542	6.7	666.7	0	81.3	45-115	0			
Chrysene	592.3	6.7	666.7	0	88.8	55-110	0			
Dibenzo(a,h)anthracene	658.7	6.7	666.7	0	98.8	40-125	0			
Fluoranthene	597	6.7	666.7	0	89.5	55-115	0			
Fluorene	507.3	6.7	666.7	0	76.1	50-110	0			
Indeno(1,2,3-cd)pyrene	665.3	6.7	666.7	0	99.8	40-120	0			
Naphthalene	435	6.7	666.7	0	65.2	40-105	0			
Pyrene	667	6.7	666.7	0	100	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1259	0	1667	0	75.5	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1862	0	1667	0	112	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1316	0	1667	0	79	37-107	0			

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504128  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **69506** Instrument ID **SVMS4** Method: **SW846 8270D**

MS				Sample ID: 1504138-02A MS			Units: µg/Kg		Analysis Date: 4/8/2015 11:28 AM		
Client ID:		Run ID: SVMS4_150408A		SeqNo: 3216664		Prep Date: 4/7/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1368	130	1285	0	106	45-110	0				
Anthracene	1356	130	1285	296.7	82.4	55-105	0				
Benzo(a)anthracene	3533	130	1285	1624	149	50-110	0			S	
Benzo(a)pyrene	3520	130	1285	1721	140	50-110	0			S	
Benzo(b)fluoranthene	5294	130	1285	2810	193	45-115	0			S	
Benzo(k)fluoranthene	2383	130	1285	844.4	120	45-115	0			S	
Chrysene	3591	130	1285	1836	137	55-110	0			S	
Dibenzo(a,h)anthracene	1548	130	1285	466.2	84.2	40-125	0				
Fluoranthene	6893	130	1285	3746	245	55-115	0			S	
Fluorene	1079	130	1285	0	84	50-110	0				
Indeno(1,2,3-cd)pyrene	3321	130	1285	1646	130	40-120	0			S	
Naphthalene	1336	130	1285	508.6	64.4	40-105	0				
Pyrene	5384	130	1285	3091	178	45-125	0			S	
Surr: 2-Fluorobiphenyl	2178	0	3212	0	67.8	12-100	0				
Surr: 4-Terphenyl-d14	2833	0	3212	0	88.2	25-137	0				
Surr: Nitrobenzene-d5	1908	0	3212	0	59.4	37-107	0				

MSD				Sample ID: 1504138-02A MSD			Units: µg/Kg		Analysis Date: 4/8/2015 11:53 AM		
Client ID:		Run ID: SVMS4_150408A		SeqNo: 3216665		Prep Date: 4/7/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1289	130	1264	0	102	45-110	1368	5.98	30		
Anthracene	1200	130	1264	296.7	71.5	55-105	1356	12.1	30		
Benzo(a)anthracene	2723	130	1264	1624	87	50-110	3533	25.9	30		
Benzo(a)pyrene	2862	130	1264	1721	90.3	50-110	3520	20.6	30		
Benzo(b)fluoranthene	4012	130	1264	2810	95.1	45-115	5294	27.5	30		
Benzo(k)fluoranthene	2085	130	1264	844.4	98.2	45-115	2383	13.4	30		
Chrysene	2869	130	1264	1836	81.7	55-110	3591	22.4	30		
Dibenzo(a,h)anthracene	1447	130	1264	466.2	77.6	40-125	1548	6.77	30		
Fluoranthene	4922	130	1264	3746	93	55-115	6893	33.4	30	R	
Fluorene	1005	130	1264	0	79.5	50-110	1079	7.17	30		
Indeno(1,2,3-cd)pyrene	3026	130	1264	1646	109	40-120	3321	9.29	30		
Naphthalene	1238	130	1264	508.6	57.7	40-105	1336	7.6	30		
Pyrene	4385	130	1264	3091	102	45-125	5384	20.4	30		
Surr: 2-Fluorobiphenyl	2066	0	3159	0	65.4	12-100	2178	5.27	40		
Surr: 4-Terphenyl-d14	2698	0	3159	0	85.4	25-137	2833	4.89	40		
Surr: Nitrobenzene-d5	1851	0	3159	0	58.6	37-107	1908	3.02	40		

The following samples were analyzed in this batch:

1504128-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504128  
 Project: C28 Pit Assessment 3.30.15

# QC BATCH REPORT

Batch ID: **69390** Instrument ID **VMS6** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69390-69390</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 03:16 PM</b>		
Client ID:		Run ID: <b>VMS6_150403A</b>			SeqNo: <b>3210136</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
<i>Surr: 1,2-Dichloroethane-d4</i>	1029	0	1000	0	103	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	985	0	1000	0	98.5	70-130	0			
<i>Surr: Dibromofluoromethane</i>	997.5	0	1000	0	99.8	70-130	0			
<i>Surr: Toluene-d8</i>	1070	0	1000	0	107	70-130	0			

LCS		Sample ID: <b>LCS-69390-69390</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 01:58 PM</b>		
Client ID:		Run ID: <b>VMS6_150403A</b>			SeqNo: <b>3210135</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	944.5	30	1000	0	94.4	75-125	0			
Ethylbenzene	1046	30	1000	0	105	75-125	0			
m,p-Xylene	2062	60	2000	0	103	80-125	0			
o-Xylene	1034	30	1000	0	103	75-125	0			
Toluene	1006	30	1000	0	101	70-125	0			
Xylenes, Total	3096	90	3000	0	103	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	1036	0	1000	0	104	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	994	0	1000	0	99.4	70-130	0			
<i>Surr: Dibromofluoromethane</i>	1024	0	1000	0	102	70-130	0			
<i>Surr: Toluene-d8</i>	1094	0	1000	0	109	70-130	0			

MS		Sample ID: <b>1504124-02A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:23 PM</b>		
Client ID:		Run ID: <b>VMS7_150407B</b>			SeqNo: <b>3216369</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15400	380	12500	1638	110	75-125	0			
Ethylbenzene	14510	380	12500	1381	105	75-125	0			
m,p-Xylene	33040	750	25000	7931	100	80-125	0			
o-Xylene	15020	380	12500	2419	101	75-125	0			
Toluene	22880	380	12500	9650	106	70-125	0			
Xylenes, Total	48060	1,100	37500	10300	101	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	11780	0	12500	0	94.2	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	12610	0	12500	0	101	70-130	0			
<i>Surr: Dibromofluoromethane</i>	11700	0	12500	0	93.6	70-130	0			
<i>Surr: Toluene-d8</i>	12240	0	12500	0	98	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504128  
**Project:** C28 Pit Assessment 3.30.15

## QC BATCH REPORT

Batch ID: **69390**      Instrument ID **VMS6**      Method: **SW8260B**

MSD		Sample ID: <b>1504124-02A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:48 PM</b>		
Client ID:		Run ID: <b>VMS7_150407B</b>			SeqNo: <b>3216371</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	14390	380	12500	1638	102	75-125	15400	6.75	30	
Ethylbenzene	13770	380	12500	1381	99.1	75-125	14510	5.26	30	
m,p-Xylene	31500	750	25000	7931	94.3	80-125	33040	4.76	30	
o-Xylene	14350	380	12500	2419	95.4	75-125	15020	4.6	30	
Toluene	21930	380	12500	9650	98.2	70-125	22880	4.24	30	
Xylenes, Total	45850	1,100	37500	10300	94.8	75-125	48060	4.71	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	11800	0	12500	0	94.4	70-130	11780	0.212	30	
<i>Surr: 4-Bromofluorobenzene</i>	12830	0	12500	0	103	70-130	12610	1.77	30	
<i>Surr: Dibromofluoromethane</i>	11770	0	12500	0	94.2	70-130	11700	0.586	30	
<i>Surr: Toluene-d8</i>	12480	0	12500	0	99.8	70-130	12240	1.87	30	

The following samples were analyzed in this batch: 1504128-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504128  
**Project:** C28 Pit Assessment 3.30.15

## QC BATCH REPORT

Batch ID: **R160806**      Instrument ID **MOIST**      Method: **E160.3M**

MBLK		Sample ID: <b>WBLKS-R160806</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216255</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	0.03	0.050								J	

LCS		Sample ID: <b>LCS-R160806</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216254</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	100	0.050	100	0	100	99.5-100.5	0				

DUP		Sample ID: <b>1504103-01B DUP</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216228</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	27.97	0.050	0	0	0		27.62	1.26	20		

DUP		Sample ID: <b>1504123-08A DUP</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216244</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	6.13	0.050	0	0	0		6.1	0.491	20		

**The following samples were analyzed in this batch:**      1504128-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



4/1/2015

FedEx Ship Manager - Print Your Label(s)

From: (816) 298-1033  
Nick Martinez  
ALS Environmental  
127 E. 1st Street

Origin ID: RILA



J151215022303LV

Ship Date: 01APR15  
ActWgt: 55.0 LB  
CAD: 2264840/NET3810

Dims: 24 X 15 X 15 IN

PARACHUTE, CO 81635

Delivery Address Bar Code



SHP TO: (816) 399-8970  
sample receiving  
ALS Laboratory Group  
3352 128TH AVE

BILL SENDER

Ref # 040115-1  
Invoice #  
PO # Parachute  
Dept #

HOLLAND, MI 49424

THU - 02 APR 10:30A  
PRIORITY OVERNIGHT

2 of 2

MPS# 7732 7423 2210

0263

Mstr# 7732 7423 1923

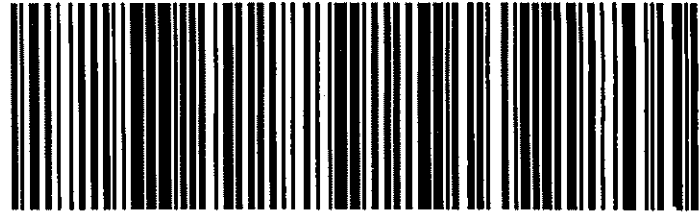
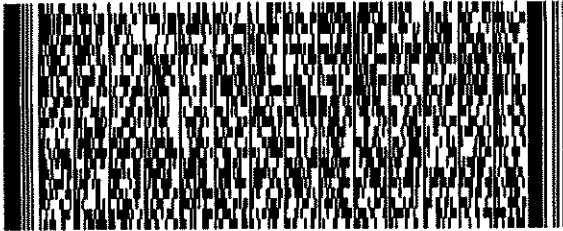
0291

49424

MI-US

GRR

XX HLMA



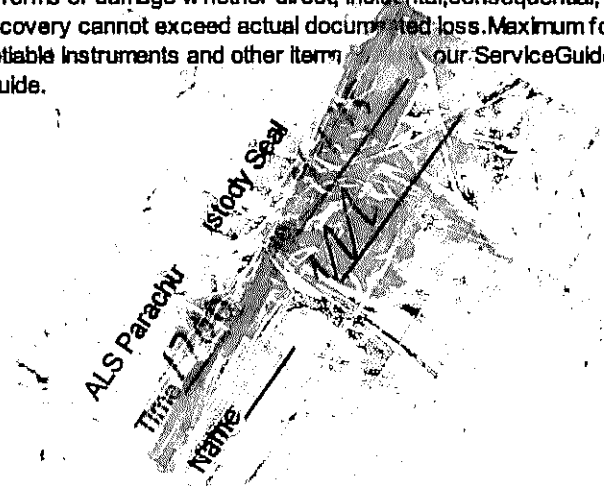
537J28FC5/EE4B

**After printing this label:**

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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Sample Receipt Checklist

Client Name: **ENCANA2**

Date/Time Received: **02-Apr-15 10:00**

Work Order: **1504128**

Received by: **KRW**

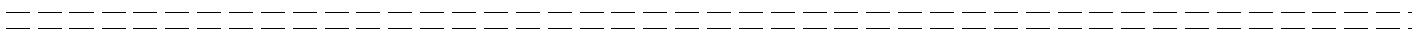
Checklist completed by Keith Wierenga 02-Apr-15  
eSignature Date

Reviewed by: Chad Whelton 03-Apr-15  
eSignature Date

Matrices: Soil  
 Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>4.6 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u> </u>		
Date/Time sample(s) sent to storage:	<u>4/2/2015 1:56:56 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u> </u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction:



13-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28 Pit Assessment 3.31.15**

Work Order: **1504129**

Dear Christopher,

ALS Environmental received 5 samples on 02-Apr-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 25.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Work Order:** 1504129

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504129-01	20150331-C28 (PITSE01) 25-27.5'	Soil		3/31/2015 09:00	4/2/2015 10:00	<input type="checkbox"/>
1504129-02	20150331-C28 (SBSE01) 15-17'	Soil		3/31/2015 11:00	4/2/2015 10:00	<input type="checkbox"/>
1504129-03	20150331-C28 (SBSE01) 25-27'	Soil		3/31/2015 11:25	4/2/2015 10:00	<input type="checkbox"/>
1504129-04	20150331-C28 (SBS01) 25-27'	Soil		3/31/2015 13:45	4/2/2015 10:00	<input type="checkbox"/>
1504129-05	20150331-C28 (SBE01) 40-42'	Soil		3/31/2015 15:40	4/2/2015 10:00	<input type="checkbox"/>

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**WorkOrder:** 1504129

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

# ALS Group USA, Corp

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (PITSE01) 25-27.5'  
**Collection Date:** 3/31/2015 09:00 AM

**Work Order:** 1504129  
**Lab ID:** 1504129-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.5	4.7	mg/Kg-dry	1	4/8/2015 12:21
Surr: 4-Terphenyl-d14	80.9			39-133	%REC	1	4/8/2015 12:21
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.4	2.9	mg/Kg-dry	1	4/3/2015 05:34
Surr: Toluene-d8	106			50-150	%REC	1	4/3/2015 05:34
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Anthracene	U		0.0036	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Benzo(a)anthracene	U		0.0046	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Benzo(a)pyrene	U		0.0016	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Benzo(b)fluoranthene	U		0.0026	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Benzo(k)fluoranthene	U		0.0047	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Chrysene	U		0.0063	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Dibenzo(a,h)anthracene	U		0.0024	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Fluoranthene	U		0.0046	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Fluorene	U		0.0042	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Indeno(1,2,3-cd)pyrene	U		0.0047	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Naphthalene	U		0.0019	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Pyrene	U		0.0057	0.0075	mg/Kg-dry	1	4/8/2015 22:07
Surr: 2-Fluorobiphenyl	55.2			12-100	%REC	1	4/8/2015 22:07
Surr: 4-Terphenyl-d14	112			25-137	%REC	1	4/8/2015 22:07
Surr: Nitrobenzene-d5	60.7			37-107	%REC	1	4/8/2015 22:07
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/2/15	Analyst: <b>BG</b>
Benzene	U		0.014	0.035	mg/Kg-dry	1	4/9/2015 13:16
Ethylbenzene	U		0.013	0.035	mg/Kg-dry	1	4/9/2015 13:16
m,p-Xylene	U		0.026	0.069	mg/Kg-dry	1	4/9/2015 13:16
o-Xylene	U		0.015	0.035	mg/Kg-dry	1	4/9/2015 13:16
Toluene	U		0.013	0.035	mg/Kg-dry	1	4/9/2015 13:16
Xylenes, Total	U		0.041	0.10	mg/Kg-dry	1	4/9/2015 13:16
Surr: 1,2-Dichloroethane-d4	98.0			70-130	%REC	1	4/9/2015 13:16
Surr: 4-Bromofluorobenzene	98.8			70-130	%REC	1	4/9/2015 13:16
Surr: Dibromofluoromethane	88.8			70-130	%REC	1	4/9/2015 13:16
Surr: Toluene-d8	99.8			70-130	%REC	1	4/9/2015 13:16
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
Moisture	13		0.025	0.050	% of sample	1	4/7/2015 14:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (SBSE01) 15-17'  
**Collection Date:** 3/31/2015 11:00 AM

**Work Order:** 1504129  
**Lab ID:** 1504129-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>110</b>		<b>1.6</b>	<b>4.7</b>	<b>mg/Kg-dry</b>	1	4/8/2015 12:51
Surr: 4-Terphenyl-d14	84.4			39-133	%REC	1	4/8/2015 12:51
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
<b>GRO (C6-C10)</b>	<b>25</b>		<b>1.4</b>	<b>2.9</b>	<b>mg/Kg-dry</b>	1	4/3/2015 13:03
Surr: Toluene-d8	107			50-150	%REC	1	4/3/2015 13:03
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Anthracene	U		0.0037	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Benzo(a)anthracene	U		0.0046	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Benzo(a)pyrene	U		0.0016	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Benzo(b)fluoranthene	U		0.0026	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Benzo(k)fluoranthene	U		0.0047	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Chrysene	U		0.0064	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Dibenzo(a,h)anthracene	U		0.0025	0.0076	mg/Kg-dry	1	4/8/2015 22:32
<b>Fluoranthene</b>	<b>0.0061</b>	J	<b>0.0047</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/8/2015 22:32
Fluorene	U		0.0042	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Indeno(1,2,3-cd)pyrene	U		0.0047	0.0076	mg/Kg-dry	1	4/8/2015 22:32
<b>Naphthalene</b>	<b>0.092</b>		<b>0.0020</b>	<b>0.0076</b>	<b>mg/Kg-dry</b>	1	4/8/2015 22:32
Pyrene	U		0.0057	0.0076	mg/Kg-dry	1	4/8/2015 22:32
Surr: 2-Fluorobiphenyl	72.3			12-100	%REC	1	4/8/2015 22:32
Surr: 4-Terphenyl-d14	116			25-137	%REC	1	4/8/2015 22:32
Surr: Nitrobenzene-d5	75.2			37-107	%REC	1	4/8/2015 22:32
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/3/15	Analyst: <b>BG</b>
Benzene	U		0.014	0.034	mg/Kg-dry	1	4/9/2015 13:42
Ethylbenzene	U		0.013	0.034	mg/Kg-dry	1	4/9/2015 13:42
<b>m,p-Xylene</b>	<b>0.027</b>	J	<b>0.026</b>	<b>0.069</b>	<b>mg/Kg-dry</b>	1	4/9/2015 13:42
o-Xylene	U		0.015	0.034	mg/Kg-dry	1	4/9/2015 13:42
Toluene	U		0.013	0.034	mg/Kg-dry	1	4/9/2015 13:42
Xylenes, Total	U		0.041	0.10	mg/Kg-dry	1	4/9/2015 13:42
Surr: 1,2-Dichloroethane-d4	98.2			70-130	%REC	1	4/9/2015 13:42
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	4/9/2015 13:42
Surr: Dibromofluoromethane	90.9			70-130	%REC	1	4/9/2015 13:42
Surr: Toluene-d8	97.4			70-130	%REC	1	4/9/2015 13:42
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	4/7/2015 14:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (SBSE01) 25-27'  
**Collection Date:** 3/31/2015 11:25 AM

**Work Order:** 1504129  
**Lab ID:** 1504129-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.6	4.7	mg/Kg-dry	1	4/8/2015 01:21
Surr: 4-Terphenyl-d14	90.2			39-133	%REC	1	4/8/2015 01:21
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.4	2.9	mg/Kg-dry	1	4/3/2015 12:13
Surr: Toluene-d8	114			50-150	%REC	1	4/3/2015 12:13
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Anthracene	U		0.0037	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Benzo(a)anthracene	U		0.0046	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Benzo(a)pyrene	U		0.0016	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Benzo(b)fluoranthene	U		0.0026	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Benzo(k)fluoranthene	U		0.0047	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Chrysene	U		0.0064	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Dibenzo(a,h)anthracene	U		0.0025	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Fluoranthene	U		0.0046	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Fluorene	U		0.0042	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Indeno(1,2,3-cd)pyrene	U		0.0047	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Naphthalene	U		0.0020	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Pyrene	U		0.0057	0.0076	mg/Kg-dry	1	4/8/2015 22:28
Surr: 2-Fluorobiphenyl	71.1			12-100	%REC	1	4/8/2015 22:28
Surr: 4-Terphenyl-d14	111			25-137	%REC	1	4/8/2015 22:28
Surr: Nitrobenzene-d5	72.9			37-107	%REC	1	4/8/2015 22:28
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/2/15	Analyst: <b>BG</b>
Benzene	U		0.014	0.034	mg/Kg-dry	1	4/9/2015 14:08
Ethylbenzene	U		0.013	0.034	mg/Kg-dry	1	4/9/2015 14:08
m,p-Xylene	U		0.026	0.069	mg/Kg-dry	1	4/9/2015 14:08
o-Xylene	U		0.015	0.034	mg/Kg-dry	1	4/9/2015 14:08
Toluene	U		0.013	0.034	mg/Kg-dry	1	4/9/2015 14:08
Xylenes, Total	U		0.041	0.10	mg/Kg-dry	1	4/9/2015 14:08
Surr: 1,2-Dichloroethane-d4	100			70-130	%REC	1	4/9/2015 14:08
Surr: 4-Bromofluorobenzene	98.8			70-130	%REC	1	4/9/2015 14:08
Surr: Dibromofluoromethane	89.3			70-130	%REC	1	4/9/2015 14:08
Surr: Toluene-d8	100			70-130	%REC	1	4/9/2015 14:08
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>
Moisture	13		0.025	0.050	% of sample	1	4/7/2015 14:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (SBS01) 25-27'  
**Collection Date:** 3/31/2015 01:45 PM

**Work Order:** 1504129  
**Lab ID:** 1504129-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.5	4.5	mg/Kg-dry	1	4/7/2015 20:51
Surr: 4-Terphenyl-d14	82.2			39-133	%REC	1	4/7/2015 20:51
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/4/2015 12:42
Surr: Toluene-d8	106			50-150	%REC	1	4/4/2015 12:42
<b>METALS BY ICP-MS</b>							
				Method: <b>SW6020A</b>		Prep: SW3050B / 4/3/15	Analyst: <b>ML</b>
Arsenic	8.2		0.35	1.7	mg/Kg-dry	4	4/4/2015 05:21
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0027	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Anthracene	U		0.0035	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Benzo(a)anthracene	U		0.0043	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Benzo(a)pyrene	U		0.0015	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Benzo(b)fluoranthene	U		0.0024	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Benzo(k)fluoranthene	U		0.0045	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Chrysene	U		0.0060	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Dibenzo(a,h)anthracene	U		0.0023	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Fluoranthene	U		0.0044	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Fluorene	U		0.0040	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Indeno(1,2,3-cd)pyrene	U		0.0045	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Naphthalene	U		0.0019	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Pyrene	U		0.0054	0.0072	mg/Kg-dry	1	4/8/2015 22:50
Surr: 2-Fluorobiphenyl	70.7			12-100	%REC	1	4/8/2015 22:50
Surr: 4-Terphenyl-d14	98.4			25-137	%REC	1	4/8/2015 22:50
Surr: Nitrobenzene-d5	72.4			37-107	%REC	1	4/8/2015 22:50
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/3/15	Analyst: <b>AK</b>
Benzene	U		0.013	0.033	mg/Kg-dry	1	4/10/2015 19:28
Ethylbenzene	U		0.012	0.033	mg/Kg-dry	1	4/10/2015 19:28
m,p-Xylene	U		0.025	0.065	mg/Kg-dry	1	4/10/2015 19:28
o-Xylene	U		0.014	0.033	mg/Kg-dry	1	4/10/2015 19:28
Toluene	U		0.012	0.033	mg/Kg-dry	1	4/10/2015 19:28
Xylenes, Total	U		0.038	0.098	mg/Kg-dry	1	4/10/2015 19:28
Surr: 1,2-Dichloroethane-d4	97.8			70-130	%REC	1	4/10/2015 19:28
Surr: 4-Bromofluorobenzene	96.2			70-130	%REC	1	4/10/2015 19:28
Surr: Dibromofluoromethane	89.9			70-130	%REC	1	4/10/2015 19:28
Surr: Toluene-d8	98.6			70-130	%REC	1	4/10/2015 19:28
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (SBS01) 25-27'  
**Collection Date:** 3/31/2015 01:45 PM

**Work Order:** 1504129  
**Lab ID:** 1504129-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	7.8		0.025	0.050	% of sample	1	4/7/2015 14:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (SBE01) 40-42'  
**Collection Date:** 3/31/2015 03:40 PM

**Work Order:** 1504129  
**Lab ID:** 1504129-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>10</b>		<b>1.5</b>	<b>4.7</b>	<b>mg/Kg-dry</b>	1	4/8/2015 01:51
Surr: 4-Terphenyl-d14	80.2			39-133	%REC	1	4/8/2015 01:51
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
<b>GRO (C6-C10)</b>	<b>U</b>		<b>1.4</b>	<b>2.9</b>	<b>mg/Kg-dry</b>	1	4/3/2015 12:38
Surr: Toluene-d8	98.9			50-150	%REC	1	4/3/2015 12:38
<b>METALS BY ICP-MS</b>							
				Method: <b>SW6020A</b>		Prep: SW3050B / 4/3/15	Analyst: <b>ML</b>
<b>Arsenic</b>	<b>9.7</b>		<b>0.38</b>	<b>1.8</b>	<b>mg/Kg-dry</b>	4	4/4/2015 05:27
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Anthracene	U		0.0036	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Benzo(a)anthracene	U		0.0046	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Benzo(a)pyrene	U		0.0016	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Benzo(b)fluoranthene	U		0.0026	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Benzo(k)fluoranthene	U		0.0047	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Chrysene	U		0.0063	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Dibenzo(a,h)anthracene	U		0.0024	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Fluoranthene	U		0.0046	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Fluorene	U		0.0042	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Indeno(1,2,3-cd)pyrene	U		0.0047	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Naphthalene	U		0.0019	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Pyrene	U		0.0057	0.0075	mg/Kg-dry	1	4/8/2015 23:13
Surr: 2-Fluorobiphenyl	65.9			12-100	%REC	1	4/8/2015 23:13
Surr: 4-Terphenyl-d14	97.0			25-137	%REC	1	4/8/2015 23:13
Surr: Nitrobenzene-d5	67.2			37-107	%REC	1	4/8/2015 23:13
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/2/15	Analyst: <b>LSY</b>
<b>Benzene</b>	<b>U</b>		<b>0.014</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/10/2015 03:09
<b>Ethylbenzene</b>	<b>U</b>		<b>0.013</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/10/2015 03:09
<b>m,p-Xylene</b>	<b>U</b>		<b>0.026</b>	<b>0.069</b>	<b>mg/Kg-dry</b>	1	4/10/2015 03:09
<b>o-Xylene</b>	<b>U</b>		<b>0.015</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/10/2015 03:09
<b>Toluene</b>	<b>U</b>		<b>0.013</b>	<b>0.034</b>	<b>mg/Kg-dry</b>	1	4/10/2015 03:09
<b>Xylenes, Total</b>	<b>U</b>		<b>0.041</b>	<b>0.10</b>	<b>mg/Kg-dry</b>	1	4/10/2015 03:09
Surr: 1,2-Dichloroethane-d4	108			70-130	%REC	1	4/10/2015 03:09
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	4/10/2015 03:09
Surr: Dibromofluoromethane	87.8			70-130	%REC	1	4/10/2015 03:09
Surr: Toluene-d8	93.6			70-130	%REC	1	4/10/2015 03:09
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 13-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 3.31.15  
**Sample ID:** 20150331-C28 (SBE01) 40-42'  
**Collection Date:** 3/31/2015 03:40 PM

**Work Order:** 1504129  
**Lab ID:** 1504129-05  
**Matrix:** SOIL

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Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	13		0.025	0.050	% of sample	1	4/7/2015 14:20

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**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504129  
**Project:** C28 Pit Assessment 3.31.15

**QC BATCH REPORT**

Batch ID: **69507** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: <b>DBLKS1-69507-69507</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 06:51 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215463</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.667	0	2	0	83.3	39-133		0		

LCS		Sample ID: <b>DLCSS1-69507-69507</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 07:21 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215464</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	200	5.0	200	0	100	61-109		0		
<i>Surr: 4-Terphenyl-d14</i>	1.502	0	2	0	75.1	39-133		0		

MS		Sample ID: <b>1504129-04A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 07:51 PM</b>		
Client ID: <b>20150331-C28 (SBS01) 25-27'</b>		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215465</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	321.3	8.2	328.6	0	97.8	48-110		0		
<i>Surr: 4-Terphenyl-d14</i>	2.387	0	3.286	0	72.6	39-133		0		

MSD		Sample ID: <b>1504129-04A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 08:21 PM</b>		
Client ID: <b>20150331-C28 (SBS01) 25-27'</b>		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215466</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	304.1	8.2	326.5	0	93.1	48-110	321.3	5.52	30	
<i>Surr: 4-Terphenyl-d14</i>	2.3	0	3.265	0	70.4	39-133	2.387	3.71	30	

**The following samples were analyzed in this batch:**

1504129-01B	1504129-02A	1504129-03B
1504129-04A	1504129-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: **69379** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69379-69379</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 11:21 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208316</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5640	0	5000	0	113	50-150	0			

LCS		Sample ID: <b>LCS-69379-69379</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 10:56 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208315</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	428300	2,500	500000	0	85.7	70-130	0			
<i>Surr: Toluene-d8</i>	4659	0	5000	0	93.2	50-150	0			

MS		Sample ID: <b>1504126-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 12:36 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208330</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1643000	2,500	500000	1137000	101	70-130	0			
<i>Surr: Toluene-d8</i>	6315	0	5000	0	126	50-150	0			

MSD		Sample ID: <b>1504126-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 01:01 AM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208318</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1491000	2,500	500000	1137000	70.8	70-130	1643000	9.66	30	
<i>Surr: Toluene-d8</i>	6190	0	5000	0	124	50-150	6315	1.99	30	

The following samples were analyzed in this batch:

1504129-01A	1504129-02A	1504129-03A
1504129-04A	1504129-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: **69400** Instrument ID **ICPMS1** Method: **SW6020A**

<b>MBLK</b>	Sample ID: <b>MBLK-69400-69400</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/4/2015 03:43 AM</b>		
Client ID:	Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209953</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic U 0.25

<b>LCS</b>	Sample ID: <b>LCS-69400-69400</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/4/2015 03:49 AM</b>		
Client ID:	Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209954</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 4.404 0.25 5 0 88.1 80-120 0

<b>MS</b>	Sample ID: <b>1504164-01AMS</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/4/2015 06:59 AM</b>		
Client ID:	Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209983</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 6.818 0.37 7.353 0.173 90.4 75-125 0

<b>MSD</b>	Sample ID: <b>1504164-01AMSD</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/4/2015 07:05 AM</b>		
Client ID:	Run ID: <b>ICPMS1_150403A</b>				SeqNo: <b>3209984</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic 6.611 0.36 7.215 0.173 89.2 75-125 6.818 3.09 25

The following samples were analyzed in this batch: 1504129-04A 1504129-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: 69506 Instrument ID SVMS4 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-69506-69506				Units: µg/Kg		Analysis Date: 4/8/2015 01:08 AM		
Client ID:		Run ID: SVMS4_150407A		SeqNo: 3216213		Prep Date: 4/7/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
Surr: 2-Fluorobiphenyl	1475	0	1667	0	88.5	12-100	0			
Surr: 4-Terphenyl-d14	1971	0	1667	0	118	25-137	0			
Surr: Nitrobenzene-d5	1452	0	1667	0	87.1	37-107	0			

LCS		Sample ID: SLCSS1-69506-69506				Units: µg/Kg		Analysis Date: 4/8/2015 01:33 AM		
Client ID:		Run ID: SVMS4_150407A		SeqNo: 3216215		Prep Date: 4/7/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	479.3	6.7	666.7	0	71.9	45-110	0			
Anthracene	566	6.7	666.7	0	84.9	55-105	0			
Benzo(a)anthracene	574.7	6.7	666.7	0	86.2	50-110	0			
Benzo(a)pyrene	560.3	6.7	666.7	0	84	50-110	0			
Benzo(b)fluoranthene	534	6.7	666.7	0	80.1	45-115	0			
Benzo(k)fluoranthene	542	6.7	666.7	0	81.3	45-115	0			
Chrysene	592.3	6.7	666.7	0	88.8	55-110	0			
Dibenzo(a,h)anthracene	658.7	6.7	666.7	0	98.8	40-125	0			
Fluoranthene	597	6.7	666.7	0	89.5	55-115	0			
Fluorene	507.3	6.7	666.7	0	76.1	50-110	0			
Indeno(1,2,3-cd)pyrene	665.3	6.7	666.7	0	99.8	40-120	0			
Naphthalene	435	6.7	666.7	0	65.2	40-105	0			
Pyrene	667	6.7	666.7	0	100	45-125	0			
Surr: 2-Fluorobiphenyl	1259	0	1667	0	75.5	12-100	0			
Surr: 4-Terphenyl-d14	1862	0	1667	0	112	25-137	0			
Surr: Nitrobenzene-d5	1316	0	1667	0	79	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: 69506 Instrument ID SVMS4 Method: SW846 8270D

MS				Sample ID: 1504138-02A MS			Units: µg/Kg		Analysis Date: 4/8/2015 11:28 AM		
Client ID:		Run ID: SVMS4_150408A		SeqNo: 3216664		Prep Date: 4/7/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1368	130	1285	0	106	45-110	0				
Anthracene	1356	130	1285	296.7	82.4	55-105	0				
Benzo(a)anthracene	3533	130	1285	1624	149	50-110	0			S	
Benzo(a)pyrene	3520	130	1285	1721	140	50-110	0			S	
Benzo(b)fluoranthene	5294	130	1285	2810	193	45-115	0			S	
Benzo(k)fluoranthene	2383	130	1285	844.4	120	45-115	0			S	
Chrysene	3591	130	1285	1836	137	55-110	0			S	
Dibenzo(a,h)anthracene	1548	130	1285	466.2	84.2	40-125	0				
Fluoranthene	6893	130	1285	3746	245	55-115	0			S	
Fluorene	1079	130	1285	0	84	50-110	0				
Indeno(1,2,3-cd)pyrene	3321	130	1285	1646	130	40-120	0			S	
Naphthalene	1336	130	1285	508.6	64.4	40-105	0				
Pyrene	5384	130	1285	3091	178	45-125	0			S	
Surr: 2-Fluorobiphenyl	2178	0	3212	0	67.8	12-100	0				
Surr: 4-Terphenyl-d14	2833	0	3212	0	88.2	25-137	0				
Surr: Nitrobenzene-d5	1908	0	3212	0	59.4	37-107	0				

MSD				Sample ID: 1504138-02A MSD			Units: µg/Kg		Analysis Date: 4/8/2015 11:53 AM		
Client ID:		Run ID: SVMS4_150408A		SeqNo: 3216665		Prep Date: 4/7/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1289	130	1264	0	102	45-110	1368	5.98	30		
Anthracene	1200	130	1264	296.7	71.5	55-105	1356	12.1	30		
Benzo(a)anthracene	2723	130	1264	1624	87	50-110	3533	25.9	30		
Benzo(a)pyrene	2862	130	1264	1721	90.3	50-110	3520	20.6	30		
Benzo(b)fluoranthene	4012	130	1264	2810	95.1	45-115	5294	27.5	30		
Benzo(k)fluoranthene	2085	130	1264	844.4	98.2	45-115	2383	13.4	30		
Chrysene	2869	130	1264	1836	81.7	55-110	3591	22.4	30		
Dibenzo(a,h)anthracene	1447	130	1264	466.2	77.6	40-125	1548	6.77	30		
Fluoranthene	4922	130	1264	3746	93	55-115	6893	33.4	30	R	
Fluorene	1005	130	1264	0	79.5	50-110	1079	7.17	30		
Indeno(1,2,3-cd)pyrene	3026	130	1264	1646	109	40-120	3321	9.29	30		
Naphthalene	1238	130	1264	508.6	57.7	40-105	1336	7.6	30		
Pyrene	4385	130	1264	3091	102	45-125	5384	20.4	30		
Surr: 2-Fluorobiphenyl	2066	0	3159	0	65.4	12-100	2178	5.27	40		
Surr: 4-Terphenyl-d14	2698	0	3159	0	85.4	25-137	2833	4.89	40		
Surr: Nitrobenzene-d5	1851	0	3159	0	58.6	37-107	1908	3.02	40		

The following samples were analyzed in this batch:

1504129-01B	1504129-02A	1504129-03B
1504129-04A	1504129-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: **69364** Instrument ID **VMS6** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69364-69364</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 05:48 PM</b>		
Client ID:		Run ID: <b>VMS6_150408A</b>			SeqNo: <b>3217891</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	983	0	1000	0	98.3	70-130	0			
Surr: 4-Bromofluorobenzene	979.5	0	1000	0	98	70-130	0			
Surr: Dibromofluoromethane	899.5	0	1000	0	90	70-130	0			
Surr: Toluene-d8	979	0	1000	0	97.9	70-130	0			

LCS		Sample ID: <b>LCS-69364-69364</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 04:30 PM</b>		
Client ID:		Run ID: <b>VMS6_150408A</b>			SeqNo: <b>3217890</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1118	30	1000	0	112	75-125	0			
Ethylbenzene	1118	30	1000	0	112	75-125	0			
m,p-Xylene	2232	60	2000	0	112	80-125	0			
o-Xylene	1078	30	1000	0	108	75-125	0			
Toluene	1118	30	1000	0	112	70-125	0			
Xylenes, Total	3310	90	3000	0	110	75-125	0			
Surr: 1,2-Dichloroethane-d4	968.5	0	1000	0	96.8	70-130	0			
Surr: 4-Bromofluorobenzene	979.5	0	1000	0	98	70-130	0			
Surr: Dibromofluoromethane	989.5	0	1000	0	99	70-130	0			
Surr: Toluene-d8	994.5	0	1000	0	99.4	70-130	0			

MS		Sample ID: <b>1504103-03A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/9/2015 10:40 AM</b>		
Client ID:		Run ID: <b>VMS7_150409A</b>			SeqNo: <b>3218746</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1009	30	1000	0	101	75-125	0			
Ethylbenzene	1008	30	1000	0	101	75-125	0			
m,p-Xylene	1980	60	2000	0	99	80-125	0			
o-Xylene	983	30	1000	0	98.3	75-125	0			
Toluene	991.5	30	1000	0	99.2	70-125	0			
Xylenes, Total	2964	90	3000	0	98.8	75-125	0			
Surr: 1,2-Dichloroethane-d4	926	0	1000	0	92.6	70-130	0			
Surr: 4-Bromofluorobenzene	1017	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	943.5	0	1000	0	94.4	70-130	0			
Surr: Toluene-d8	974	0	1000	0	97.4	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504129  
**Project:** C28 Pit Assessment 3.31.15

## QC BATCH REPORT

Batch ID: **69364**      Instrument ID **VMS6**      Method: **SW8260B**

MSD		Sample ID: 1504103-03A MSD				Units: µg/Kg		Analysis Date: 4/9/2015 11:04 AM		
Client ID:		Run ID: VMS7_150409A			SeqNo: 3218747		Prep Date: 4/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	929.5	30	1000	0	93	75-125	1009	8.2	30	
Ethylbenzene	918	30	1000	0	91.8	75-125	1008	9.4	30	
m,p-Xylene	1820	60	2000	0	91	80-125	1980	8.42	30	
o-Xylene	900.5	30	1000	0	90	75-125	983	8.76	30	
Toluene	915	30	1000	0	91.5	70-125	991.5	8.03	30	
Xylenes, Total	2721	90	3000	0	90.7	75-125	2964	8.53	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	917	0	1000	0	91.7	70-130	926	0.977	30	
<i>Surr: 4-Bromofluorobenzene</i>	1005	0	1000	0	100	70-130	1017	1.19	30	
<i>Surr: Dibromofluoromethane</i>	947	0	1000	0	94.7	70-130	943.5	0.37	30	
<i>Surr: Toluene-d8</i>	977	0	1000	0	97.7	70-130	974	0.308	30	

The following samples were analyzed in this batch:

1504129-01A	1504129-03A	1504129-05B
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: **69390** Instrument ID **VMS6** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69390-69390</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 03:16 PM</b>		
Client ID:		Run ID: <b>VMS6_150403A</b>			SeqNo: <b>3210136</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	1029	0	1000	0	103	70-130	0			
Surr: 4-Bromofluorobenzene	985	0	1000	0	98.5	70-130	0			
Surr: Dibromofluoromethane	997.5	0	1000	0	99.8	70-130	0			
Surr: Toluene-d8	1070	0	1000	0	107	70-130	0			

LCS		Sample ID: <b>LCS-69390-69390</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 01:58 PM</b>		
Client ID:		Run ID: <b>VMS6_150403A</b>			SeqNo: <b>3210135</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	944.5	30	1000	0	94.4	75-125	0			
Ethylbenzene	1046	30	1000	0	105	75-125	0			
m,p-Xylene	2062	60	2000	0	103	80-125	0			
o-Xylene	1034	30	1000	0	103	75-125	0			
Toluene	1006	30	1000	0	101	70-125	0			
Xylenes, Total	3096	90	3000	0	103	75-125	0			
Surr: 1,2-Dichloroethane-d4	1036	0	1000	0	104	70-130	0			
Surr: 4-Bromofluorobenzene	994	0	1000	0	99.4	70-130	0			
Surr: Dibromofluoromethane	1024	0	1000	0	102	70-130	0			
Surr: Toluene-d8	1094	0	1000	0	109	70-130	0			

MS		Sample ID: <b>1504124-02A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:23 PM</b>		
Client ID:		Run ID: <b>VMS7_150407B</b>			SeqNo: <b>3216369</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15400	380	12500	1638	110	75-125	0			
Ethylbenzene	14510	380	12500	1381	105	75-125	0			
m,p-Xylene	33040	750	25000	7931	100	80-125	0			
o-Xylene	15020	380	12500	2419	101	75-125	0			
Toluene	22880	380	12500	9650	106	70-125	0			
Xylenes, Total	48060	1,100	37500	10300	101	75-125	0			
Surr: 1,2-Dichloroethane-d4	11780	0	12500	0	94.2	70-130	0			
Surr: 4-Bromofluorobenzene	12610	0	12500	0	101	70-130	0			
Surr: Dibromofluoromethane	11700	0	12500	0	93.6	70-130	0			
Surr: Toluene-d8	12240	0	12500	0	98	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504129  
**Project:** C28 Pit Assessment 3.31.15

## QC BATCH REPORT

Batch ID: **69390**      Instrument ID **VMS6**      Method: **SW8260B**

MSD		Sample ID: <b>1504124-02A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:48 PM</b>		
Client ID:		Run ID: <b>VMS7_150407B</b>			SeqNo: <b>3216371</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	14390	380	12500	1638	102	75-125	15400	6.75	30	
Ethylbenzene	13770	380	12500	1381	99.1	75-125	14510	5.26	30	
m,p-Xylene	31500	750	25000	7931	94.3	80-125	33040	4.76	30	
o-Xylene	14350	380	12500	2419	95.4	75-125	15020	4.6	30	
Toluene	21930	380	12500	9650	98.2	70-125	22880	4.24	30	
Xylenes, Total	45850	1,100	37500	10300	94.8	75-125	48060	4.71	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	11800	0	12500	0	94.4	70-130	11780	0.212	30	
<i>Surr: 4-Bromofluorobenzene</i>	12830	0	12500	0	103	70-130	12610	1.77	30	
<i>Surr: Dibromofluoromethane</i>	11770	0	12500	0	94.2	70-130	11700	0.586	30	
<i>Surr: Toluene-d8</i>	12480	0	12500	0	99.8	70-130	12240	1.87	30	

The following samples were analyzed in this batch: 1504129-02A

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: **69408** Instrument ID **VMS6** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69408-69408</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/5/2015 06:32 AM</b>		
Client ID:		Run ID: <b>VMS6_150404A</b>			SeqNo: <b>3211736</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	1010	0	1000	0	101	70-130	0			
Surr: 4-Bromofluorobenzene	997	0	1000	0	99.7	70-130	0			
Surr: Dibromofluoromethane	983	0	1000	0	98.3	70-130	0			
Surr: Toluene-d8	999.5	0	1000	0	100	70-130	0			

LCS		Sample ID: <b>LCS-69408-69408</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/5/2015 05:15 AM</b>		
Client ID:		Run ID: <b>VMS6_150404A</b>			SeqNo: <b>3211734</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	987.5	30	1000	0	98.8	75-125	0			
Ethylbenzene	987.5	30	1000	0	98.8	75-125	0			
m,p-Xylene	1967	60	2000	0	98.4	80-125	0			
o-Xylene	961	30	1000	0	96.1	75-125	0			
Toluene	973	30	1000	0	97.3	70-125	0			
Xylenes, Total	2928	90	3000	0	97.6	75-125	0			
Surr: 1,2-Dichloroethane-d4	998.5	0	1000	0	99.8	70-130	0			
Surr: 4-Bromofluorobenzene	1013	0	1000	0	101	70-130	0			
Surr: Dibromofluoromethane	1028	0	1000	0	103	70-130	0			
Surr: Toluene-d8	1005	0	1000	0	100	70-130	0			

MS		Sample ID: <b>1504226-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/11/2015 12:27 PM</b>		
Client ID:		Run ID: <b>VMS6_150410B</b>			SeqNo: <b>3221351</b>		Prep Date: <b>4/3/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	60170	2,000	66670	0	90.2	75-125	0			
Ethylbenzene	54970	2,000	66670	0	82.4	75-125	0			
m,p-Xylene	108800	4,000	133300	0	81.6	80-125	0			
o-Xylene	53270	2,000	66670	0	79.9	75-125	0			
Toluene	57800	2,000	66670	0	86.7	70-125	0			
Xylenes, Total	162100	6,000	200000	0	81	75-125	0			
Surr: 1,2-Dichloroethane-d4	64630	0	66670	0	97	70-130	0			
Surr: 4-Bromofluorobenzene	66770	0	66670	0	100	70-130	0			
Surr: Dibromofluoromethane	63670	0	66670	0	95.5	70-130	0			
Surr: Toluene-d8	65970	0	66670	0	99	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504129  
**Project:** C28 Pit Assessment 3.31.15

## QC BATCH REPORT

Batch ID: **69408**      Instrument ID **VMS6**      Method: **SW8260B**

MSD		Sample ID: 1504226-01A MSD				Units: µg/Kg		Analysis Date: 4/11/2015 12:54 PM		
Client ID:		Run ID: VMS6_150410B			SeqNo: 3221352		Prep Date: 4/3/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	66770	2,000	66670	0	100	75-125	60170	10.4	30	
Ethylbenzene	66200	2,000	66670	0	99.3	75-125	54970	18.5	30	
m,p-Xylene	130900	4,000	133300	0	98.2	80-125	108800	18.4	30	
o-Xylene	63030	2,000	66670	0	94.6	75-125	53270	16.8	30	
Toluene	66600	2,000	66670	0	99.9	70-125	57800	14.1	30	
Xylenes, Total	193900	6,000	200000	0	97	75-125	162100	17.9	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>64770</i>	<i>0</i>	<i>66670</i>	<i>0</i>	<i>97.2</i>	<i>70-130</i>	<i>64630</i>	<i>0.206</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>66930</i>	<i>0</i>	<i>66670</i>	<i>0</i>	<i>100</i>	<i>70-130</i>	<i>66770</i>	<i>0.249</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>65470</i>	<i>0</i>	<i>66670</i>	<i>0</i>	<i>98.2</i>	<i>70-130</i>	<i>63670</i>	<i>2.79</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>65100</i>	<i>0</i>	<i>66670</i>	<i>0</i>	<i>97.6</i>	<i>70-130</i>	<i>65970</i>	<i>1.32</i>	<i>30</i>	

The following samples were analyzed in this batch: 1504129-04A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504129  
 Project: C28 Pit Assessment 3.31.15

# QC BATCH REPORT

Batch ID: **R160806** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: <b>WBLKS-R160806</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>				SeqNo: <b>3216255</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	0.03	0.050								J	

LCS		Sample ID: <b>LCS-R160806</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>				SeqNo: <b>3216254</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	100	0.050	100		0	100	99.5-100.5	0			

DUP		Sample ID: <b>1504103-01B DUP</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>				SeqNo: <b>3216228</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	27.97	0.050	0		0	0		27.62	1.26	20	

DUP		Sample ID: <b>1504123-08A DUP</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>				SeqNo: <b>3216244</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	6.13	0.050	0		0	0		6.1	0.491	20	

The following samples were analyzed in this batch:

1504129-01B	1504129-02A	1504129-03B
1504129-04A	1504129-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



ALS Laboratory Group

CHAIN OF CUSTODY

Failure to complete all section of this form may delay analysis.

COC number (for client tracking)

CLIENT CONTACT AND REPORTING INFORMATION		INVOICE ADDRESS (If other than reporting address)		ANALYSIS REQUIRED (suite codes must be listed to attract suite prices)																		
Company Name: Encana Oil & Gas (USA)		Company Name: SAME		BTEX TPH GRO/DRO Table 910-1 PAHs 8270 SIM EC PH SAR Table 910-1 Metals: AS, Be, Cd, Cr III, Cr VI, Cu, Pb, Hg, Ni, Se, Ag, Zn DRO Arsenic																		
Project Manager: Chris Hines		Contact Name: SAME																				
Address: 143 Diamond Avenue		Address: SAME																				
Parachula Co, 81835																						
Phone: 970.285.2653																						
PROJECT INFORMATION		Project ID: C28 Pit Assessment																				
Email 1: ENCANACO-LTENV		Site: C28																				
Email 2:		PD No: 03415005																				
SERVICE REQUEST (Express services subject to availability)		ALS Quote No: NA																				
<input checked="" type="checkbox"/> Regular (default)																						
<input type="checkbox"/> Express (Pls specify date required) (express fee will apply)																						

ALS ID #	SAMPLE IDENTIFICATION (this description will appear on report)	MATRIX (a)	SAMPLING AND CONTAINER INFO			REMARKS	CROSS THE REQUESTED ANALYSIS																
			Date	Time	Tot Bottle																		
1	20150331-C28 (DASE41)	S	3/31/15	0900	2	25-27.5'	X	X	X	X	X	X	X										
7	20150331-C28 (SBSE41)	S	3/31/15	1100	1	15-17'	X	X	X														
3	20150331-C28 (SBSE41)	S	3/31/15	1125	2	25-27'	X	X	X	X	X	X	X										
4	20150331-C28 (SBSE41)	S	3/31/15	1345	1	25-27'	X	X	X												X		
5	20150331-C28 (SBSE41)	S	3/31/15	1540	2	40-42'	X	X	X												X		
							* HOLD ALL ANALYSIS EXCEPT FOR TPH, BTEX, PAH'S & ARSENIC																

CLIENT SIGNATURES		For lab use only			
Client's Signature:	Cooler Security Seal <input type="checkbox"/> sealed <input type="checkbox"/> broken <input type="checkbox"/> not available	Sample Temp <input type="checkbox"/> chilled deg °C <input type="checkbox"/> ambient	No of Cooler Received courier / cooler box	Courier Name:	Received by (lab): Committed by:
Client's Date and Time of Completion: 3/31/15 1800					Date and Time 4/2/15 1000 Date and Time

Note: (a) DW (Drinking water), SW (Surface water), GW (Ground water), WW (Waste water), S (Soil), SL (Sludge), SE (Sediment), OS (Other solid material)  
 ALS Technichem (HK) Pty Ltd Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2810 1044 Fax: +852 2810 2081 Email: HongKong@alsglobal.com

4/1/2015

FedEx Ship Manager - Print Your Label(s)

From: (816) 298-1033  
Nick Martinez  
ALS Environmental  
127 E. 1st Street

Origin ID: RILA

FedEx Express

Ship Date: 01APR15  
ActWgt: 55.0 LB  
OAD: 2264840/NET3610

Dims: 24 X 15 X 15 IN

PARACHUTE, CO 81635



J151215022303UV

Delivery Address Bar Code



SHP TO: (816) 399-6970  
sample receiving  
ALS Laboratory Group  
3352 128TH AVE

BILL SENDER

Ref # 040115-1  
Invoice #  
PO # Parachute  
Dept #

HOLLAND, MI 49424

THU - 02 APR 10:30A  
PRIORITY OVERNIGHT

2 of 2

MPS# 7732 7423 2210

0263

Mstr# 7732 7423 1923

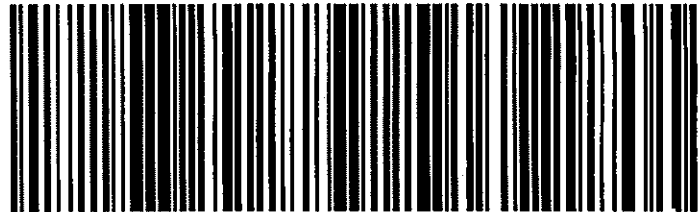
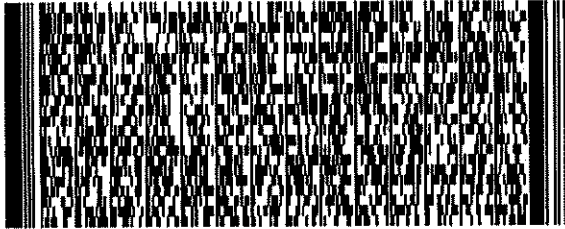
0201

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537 J2/BFC5/EE4B

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ALS Parachu  
Title  
Name  
History Seal





09-Apr-2015

Christopher Hines  
Encana Oil and Gas (USA) Inc.  
143 Diamond Avenue  
Parachute, CO 81635

Re: **C28 Pit Assessment 4.1.15**

Work Order: **1504127**

Dear Christopher,

ALS Environmental received 3 samples on 02-Apr-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 19.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

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Environmental ALS Environmental logo icon consisting of a small blue triangle with a yellow flame.

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**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**Work Order:** 1504127

**Work Order Sample Summary**

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<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504127-01	20150401-C28 (SBN01) 25-27'	Soil		4/1/2015 09:50	4/2/2015 10:00	<input type="checkbox"/>
1504127-02	20150401-C28 (SBSE02) 25-27'	Soil		4/1/2015 11:30	4/2/2015 10:00	<input type="checkbox"/>
1504127-03	20150401-C28 (SBE01) 25-27'	Soil		4/1/2015 13:35	4/2/2015 10:00	<input type="checkbox"/>

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**WorkOrder:** 1504127

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

**ALS Group USA, Corp**

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**Sample ID:** 20150401-C28 (SBN01) 25-27'  
**Collection Date:** 4/1/2015 09:50 AM

**Work Order:** 1504127  
**Lab ID:** 1504127-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>11</b>		<b>1.5</b>	<b>4.4</b>	<b>mg/Kg-dry</b>	1	4/7/2015 21:51
Surr: 4-Terphenyl-d14	77.7			39-133	%REC	1	4/7/2015 21:51
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.7	mg/Kg-dry	1	4/3/2015 04:20
Surr: Toluene-d8	108			50-150	%REC	1	4/3/2015 04:20
<b>METALS ANALYSIS BY ICP</b>							
				Method: <b>SW846 6010C</b>		Prep: SW3050B / 4/4/15	Analyst: <b>JEC</b>
<b>Arsenic</b>	<b>5.9</b>		<b>0.10</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	4/6/2015 15:13
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0026	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Anthracene	U		0.0034	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Benzo(a)anthracene	U		0.0043	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Benzo(a)pyrene	U		0.0015	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Benzo(b)fluoranthene	U		0.0024	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Benzo(k)fluoranthene	U		0.0044	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Chrysene	U		0.0060	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Dibenzo(a,h)anthracene	U		0.0023	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Fluoranthene	U		0.0043	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Fluorene	U		0.0039	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Indeno(1,2,3-cd)pyrene	U		0.0044	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Naphthalene	U		0.0018	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Pyrene	U		0.0053	0.0071	mg/Kg-dry	1	4/8/2015 20:26
Surr: 2-Fluorobiphenyl	50.5			12-100	%REC	1	4/8/2015 20:26
Surr: 4-Terphenyl-d14	103			25-137	%REC	1	4/8/2015 20:26
Surr: Nitrobenzene-d5	49.6			37-107	%REC	1	4/8/2015 20:26
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/2/15	Analyst: <b>AK</b>
Benzene	U		0.013	0.032	mg/Kg-dry	1	4/9/2015 01:55
Ethylbenzene	U		0.012	0.032	mg/Kg-dry	1	4/9/2015 01:55
m,p-Xylene	U		0.024	0.064	mg/Kg-dry	1	4/9/2015 01:55
o-Xylene	U		0.014	0.032	mg/Kg-dry	1	4/9/2015 01:55
<b>Toluene</b>	<b>0.016</b>	<b>J</b>	<b>0.012</b>	<b>0.032</b>	<b>mg/Kg-dry</b>	1	4/9/2015 01:55
Xylenes, Total	U		0.038	0.096	mg/Kg-dry	1	4/9/2015 01:55
Surr: 1,2-Dichloroethane-d4	92.8			70-130	%REC	1	4/9/2015 01:55
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	4/9/2015 01:55
Surr: Dibromofluoromethane	91.0			70-130	%REC	1	4/9/2015 01:55
Surr: Toluene-d8	98.1			70-130	%REC	1	4/9/2015 01:55
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**Sample ID:** 20150401-C28 (SBN01) 25-27'  
**Collection Date:** 4/1/2015 09:50 AM

**Work Order:** 1504127  
**Lab ID:** 1504127-01  
**Matrix:** SOIL

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Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	6.1		0.025	0.050	% of sample	1	4/7/2015 14:20

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**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**Sample ID:** 20150401-C28 (SBSE02) 25-27'  
**Collection Date:** 4/1/2015 11:30 AM

**Work Order:** 1504127  
**Lab ID:** 1504127-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
DRO (C10-C28)	U		1.5	4.5	mg/Kg-dry	1	4/7/2015 22:21
Surr: 4-Terphenyl-d14	78.5			39-133	%REC	1	4/7/2015 22:21
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
GRO (C6-C10)	U		1.3	2.8	mg/Kg-dry	1	4/3/2015 04:44
Surr: Toluene-d8	104			50-150	%REC	1	4/3/2015 04:44
<b>METALS ANALYSIS BY ICP</b>							
				Method: <b>SW846 6010C</b>		Prep: SW3050B / 4/4/15	Analyst: <b>JEC</b>
Arsenic	<b>9.4</b>		<b>0.089</b>	<b>0.36</b>	mg/Kg-dry	1	4/6/2015 15:18
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0027	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Anthracene	U		0.0035	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Benzo(a)anthracene	U		0.0044	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Benzo(a)pyrene	U		0.0015	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Benzo(b)fluoranthene	U		0.0024	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Benzo(k)fluoranthene	U		0.0045	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Chrysene	U		0.0061	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Dibenzo(a,h)anthracene	U		0.0023	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Fluoranthene	U		0.0044	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Fluorene	U		0.0040	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Indeno(1,2,3-cd)pyrene	U		0.0045	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Naphthalene	U		0.0019	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Pyrene	U		0.0054	0.0072	mg/Kg-dry	1	4/8/2015 20:51
Surr: 2-Fluorobiphenyl	73.6			12-100	%REC	1	4/8/2015 20:51
Surr: 4-Terphenyl-d14	96.6			25-137	%REC	1	4/8/2015 20:51
Surr: Nitrobenzene-d5	72.5			37-107	%REC	1	4/8/2015 20:51
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/2/15	Analyst: <b>AK</b>
Benzene	U		0.013	0.033	mg/Kg-dry	1	4/9/2015 02:20
Ethylbenzene	U		0.012	0.033	mg/Kg-dry	1	4/9/2015 02:20
m,p-Xylene	U		0.025	0.066	mg/Kg-dry	1	4/9/2015 02:20
o-Xylene	U		0.014	0.033	mg/Kg-dry	1	4/9/2015 02:20
<b>Toluene</b>	<b>0.013</b>	J	<b>0.012</b>	<b>0.033</b>	<b>mg/Kg-dry</b>	1	4/9/2015 02:20
Xylenes, Total	U		0.039	0.099	mg/Kg-dry	1	4/9/2015 02:20
Surr: 1,2-Dichloroethane-d4	91.2			70-130	%REC	1	4/9/2015 02:20
Surr: 4-Bromofluorobenzene	99.4			70-130	%REC	1	4/9/2015 02:20
Surr: Dibromofluoromethane	88.9			70-130	%REC	1	4/9/2015 02:20
Surr: Toluene-d8	98.2			70-130	%REC	1	4/9/2015 02:20
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.

**Project:** C28 Pit Assessment 4.1.15

**Sample ID:** 20150401-C28 (SBSE02) 25-27'

**Collection Date:** 4/1/2015 11:30 AM

**Work Order:** 1504127

**Lab ID:** 1504127-02

**Matrix:** SOIL

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Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	9.2		0.025	0.050	% of sample	1	4/7/2015 14:20

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**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**Sample ID:** 20150401-C28 (SBE01) 25-27'  
**Collection Date:** 4/1/2015 01:35 PM

**Work Order:** 1504127  
**Lab ID:** 1504127-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015M</b>		Prep: SW3541 / 4/7/15	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>9.6</b>		<b>1.5</b>	<b>4.6</b>	<b>mg/Kg-dry</b>	1	4/7/2015 22:51
<i>Surr: 4-Terphenyl-d14</i>	75.1			39-133	%REC	1	4/7/2015 22:51
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
				Method: <b>SW8015D</b>		Prep: SW5035 / 4/2/15	Analyst: <b>IT</b>
<b>GRO (C6-C10)</b>	U		1.4	2.8	mg/Kg-dry	1	4/3/2015 05:09
<i>Surr: Toluene-d8</i>	109			50-150	%REC	1	4/3/2015 05:09
<b>METALS ANALYSIS BY ICP</b>							
				Method: <b>SW846 6010C</b>		Prep: SW3050B / 4/4/15	Analyst: <b>JEC</b>
<b>Arsenic</b>	<b>11</b>		<b>0.10</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	4/6/2015 15:24
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW846 8270D</b>		Prep: SW3541 / 4/7/15	Analyst: <b>RS</b>
Acenaphthene	U		0.0028	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Anthracene	U		0.0036	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Benzo(a)anthracene	U		0.0045	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Benzo(a)pyrene	U		0.0016	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Benzo(b)fluoranthene	U		0.0025	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Benzo(k)fluoranthene	U		0.0046	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Chrysene	U		0.0062	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Dibenzo(a,h)anthracene	U		0.0024	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Fluoranthene	U		0.0045	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Fluorene	U		0.0041	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Indeno(1,2,3-cd)pyrene	U		0.0046	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Naphthalene	U		0.0019	0.0074	mg/Kg-dry	1	4/8/2015 21:16
Pyrene	U		0.0056	0.0074	mg/Kg-dry	1	4/8/2015 21:16
<i>Surr: 2-Fluorobiphenyl</i>	64.2			12-100	%REC	1	4/8/2015 21:16
<i>Surr: 4-Terphenyl-d14</i>	113			25-137	%REC	1	4/8/2015 21:16
<i>Surr: Nitrobenzene-d5</i>	67.1			37-107	%REC	1	4/8/2015 21:16
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Method: <b>SW8260B</b>		Prep: SW5035 / 4/2/15	Analyst: <b>AK</b>
Benzene	U		0.014	0.034	mg/Kg-dry	1	4/9/2015 02:44
Ethylbenzene	U		0.013	0.034	mg/Kg-dry	1	4/9/2015 02:44
m,p-Xylene	U		0.026	0.068	mg/Kg-dry	1	4/9/2015 02:44
o-Xylene	U		0.015	0.034	mg/Kg-dry	1	4/9/2015 02:44
Toluene	U		0.013	0.034	mg/Kg-dry	1	4/9/2015 02:44
Xylenes, Total	U		0.040	0.10	mg/Kg-dry	1	4/9/2015 02:44
<i>Surr: 1,2-Dichloroethane-d4</i>	93.8			70-130	%REC	1	4/9/2015 02:44
<i>Surr: 4-Bromofluorobenzene</i>	101			70-130	%REC	1	4/9/2015 02:44
<i>Surr: Dibromofluoromethane</i>	91.2			70-130	%REC	1	4/9/2015 02:44
<i>Surr: Toluene-d8</i>	97.2			70-130	%REC	1	4/9/2015 02:44
<b>MOISTURE</b>							
				Method: <b>E160.3M</b>			Analyst: <b>EVB</b>

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

Date: 09-Apr-15

**Client:** Encana Oil and Gas (USA) Inc.  
**Project:** C28 Pit Assessment 4.1.15  
**Sample ID:** 20150401-C28 (SBE01) 25-27'  
**Collection Date:** 4/1/2015 01:35 PM

**Work Order:** 1504127  
**Lab ID:** 1504127-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Moisture	12		0.025	0.050	% of sample	1	4/7/2015 14:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504127  
**Project:** C28 Pit Assessment 4.1.15

**QC BATCH REPORT**

Batch ID: **69507** Instrument ID **GC8** Method: **SW8015M**

<b>MBLK</b>		Sample ID: <b>DBLKS1-69507-69507</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 06:51 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215463</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	1.667	0	2	0	83.3	39-133		0		

<b>LCS</b>		Sample ID: <b>DLCSS1-69507-69507</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 07:21 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215464</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	200	5.0	200	0	100	61-109		0		
<i>Surr: 4-Terphenyl-d14</i>	1.502	0	2	0	75.1	39-133		0		

<b>MS</b>		Sample ID: <b>1504129-04A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 07:51 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215465</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	321.3	8.2	328.6	0	97.8	48-110		0		
<i>Surr: 4-Terphenyl-d14</i>	2.387	0	3.286	0	72.6	39-133		0		

<b>MSD</b>		Sample ID: <b>1504129-04A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/7/2015 08:21 PM</b>		
Client ID:		Run ID: <b>GC8_150407A</b>		SeqNo: <b>3215466</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	304.1	8.2	326.5	0	93.1	48-110	321.3	5.52	30	
<i>Surr: 4-Terphenyl-d14</i>	2.3	0	3.265	0	70.4	39-133	2.387	3.71	30	

The following samples were analyzed in this batch: 1504127-01B 1504127-02B 1504127-03B

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504127  
**Project:** C28 Pit Assessment 4.1.15

## QC BATCH REPORT

Batch ID: **69379**      Instrument ID **GC9**      Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-69379-69379</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 11:21 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208316</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5640	0	5000	0	113	50-150	0			

LCS		Sample ID: <b>LCS-69379-69379</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/2/2015 10:56 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208315</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	428300	2,500	500000	0	85.7	70-130	0			
<i>Surr: Toluene-d8</i>	4659	0	5000	0	93.2	50-150	0			

MS		Sample ID: <b>1504126-01A MS</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 12:36 PM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208330</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1643000	2,500	500000	1137000	101	70-130	0			
<i>Surr: Toluene-d8</i>	6315	0	5000	0	126	50-150	0			

MSD		Sample ID: <b>1504126-01A MSD</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/3/2015 01:01 AM</b>		
Client ID:		Run ID: <b>GC9_150402A</b>		SeqNo: <b>3208318</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1491000	2,500	500000	1137000	70.8	70-130	1643000	9.66	30	
<i>Surr: Toluene-d8</i>	6190	0	5000	0	124	50-150	6315	1.99	30	

**The following samples were analyzed in this batch:**

1504127-01A	1504127-02A	1504127-03A
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**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504127  
**Project:** C28 Pit Assessment 4.1.15

## QC BATCH REPORT

Batch ID: **69506**      Instrument ID **SVMS4**      Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-69506-69506</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:08 AM</b>		
Client ID:		Run ID: <b>SVMS4_150407A</b>		SeqNo: <b>3216213</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
<i>Surr: 2-Fluorobiphenyl</i>	1475	0	1667	0	88.5	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1971	0	1667	0	118	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1452	0	1667	0	87.1	37-107	0			

LCS		Sample ID: <b>SLCSS1-69506-69506</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 01:33 AM</b>		
Client ID:		Run ID: <b>SVMS4_150407A</b>		SeqNo: <b>3216215</b>		Prep Date: <b>4/7/2015</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	479.3	6.7	666.7	0	71.9	45-110	0			
Anthracene	566	6.7	666.7	0	84.9	55-105	0			
Benzo(a)anthracene	574.7	6.7	666.7	0	86.2	50-110	0			
Benzo(a)pyrene	560.3	6.7	666.7	0	84	50-110	0			
Benzo(b)fluoranthene	534	6.7	666.7	0	80.1	45-115	0			
Benzo(k)fluoranthene	542	6.7	666.7	0	81.3	45-115	0			
Chrysene	592.3	6.7	666.7	0	88.8	55-110	0			
Dibenzo(a,h)anthracene	658.7	6.7	666.7	0	98.8	40-125	0			
Fluoranthene	597	6.7	666.7	0	89.5	55-115	0			
Fluorene	507.3	6.7	666.7	0	76.1	50-110	0			
Indeno(1,2,3-cd)pyrene	665.3	6.7	666.7	0	99.8	40-120	0			
Naphthalene	435	6.7	666.7	0	65.2	40-105	0			
Pyrene	667	6.7	666.7	0	100	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1259	0	1667	0	75.5	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1862	0	1667	0	112	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1316	0	1667	0	79	37-107	0			

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504127  
 Project: C28 Pit Assessment 4.1.15

# QC BATCH REPORT

Batch ID: 69506 Instrument ID SVMS4 Method: SW846 8270D

MS				Sample ID: 1504138-02A MS			Units: µg/Kg		Analysis Date: 4/8/2015 11:28 AM		
Client ID:		Run ID: SVMS4_150408A		SeqNo: 3216664		Prep Date: 4/7/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1368	130	1285	0	106	45-110	0				
Anthracene	1356	130	1285	296.7	82.4	55-105	0				
Benzo(a)anthracene	3533	130	1285	1624	149	50-110	0			S	
Benzo(a)pyrene	3520	130	1285	1721	140	50-110	0			S	
Benzo(b)fluoranthene	5294	130	1285	2810	193	45-115	0			S	
Benzo(k)fluoranthene	2383	130	1285	844.4	120	45-115	0			S	
Chrysene	3591	130	1285	1836	137	55-110	0			S	
Dibenzo(a,h)anthracene	1548	130	1285	466.2	84.2	40-125	0				
Fluoranthene	6893	130	1285	3746	245	55-115	0			S	
Fluorene	1079	130	1285	0	84	50-110	0				
Indeno(1,2,3-cd)pyrene	3321	130	1285	1646	130	40-120	0			S	
Naphthalene	1336	130	1285	508.6	64.4	40-105	0				
Pyrene	5384	130	1285	3091	178	45-125	0			S	
Surr: 2-Fluorobiphenyl	2178	0	3212	0	67.8	12-100	0				
Surr: 4-Terphenyl-d14	2833	0	3212	0	88.2	25-137	0				
Surr: Nitrobenzene-d5	1908	0	3212	0	59.4	37-107	0				

MSD				Sample ID: 1504138-02A MSD			Units: µg/Kg		Analysis Date: 4/8/2015 11:53 AM		
Client ID:		Run ID: SVMS4_150408A		SeqNo: 3216665		Prep Date: 4/7/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1289	130	1264	0	102	45-110	1368	5.98	30		
Anthracene	1200	130	1264	296.7	71.5	55-105	1356	12.1	30		
Benzo(a)anthracene	2723	130	1264	1624	87	50-110	3533	25.9	30		
Benzo(a)pyrene	2862	130	1264	1721	90.3	50-110	3520	20.6	30		
Benzo(b)fluoranthene	4012	130	1264	2810	95.1	45-115	5294	27.5	30		
Benzo(k)fluoranthene	2085	130	1264	844.4	98.2	45-115	2383	13.4	30		
Chrysene	2869	130	1264	1836	81.7	55-110	3591	22.4	30		
Dibenzo(a,h)anthracene	1447	130	1264	466.2	77.6	40-125	1548	6.77	30		
Fluoranthene	4922	130	1264	3746	93	55-115	6893	33.4	30	R	
Fluorene	1005	130	1264	0	79.5	50-110	1079	7.17	30		
Indeno(1,2,3-cd)pyrene	3026	130	1264	1646	109	40-120	3321	9.29	30		
Naphthalene	1238	130	1264	508.6	57.7	40-105	1336	7.6	30		
Pyrene	4385	130	1264	3091	102	45-125	5384	20.4	30		
Surr: 2-Fluorobiphenyl	2066	0	3159	0	65.4	12-100	2178	5.27	40		
Surr: 4-Terphenyl-d14	2698	0	3159	0	85.4	25-137	2833	4.89	40		
Surr: Nitrobenzene-d5	1851	0	3159	0	58.6	37-107	1908	3.02	40		

The following samples were analyzed in this batch: 1504127-01B 1504127-02B 1504127-03B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.  
 Work Order: 1504127  
 Project: C28 Pit Assessment 4.1.15

# QC BATCH REPORT

Batch ID: **69364** Instrument ID **VMS6** Method: **SW8260B**

MBLK		Sample ID: <b>MBLK-69364-69364</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 05:48 PM</b>		
Client ID:		Run ID: <b>VMS6_150408A</b>			SeqNo: <b>3217891</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	983	0	1000	0	98.3	70-130	0			
Surr: 4-Bromofluorobenzene	979.5	0	1000	0	98	70-130	0			
Surr: Dibromofluoromethane	899.5	0	1000	0	90	70-130	0			
Surr: Toluene-d8	979	0	1000	0	97.9	70-130	0			

LCS		Sample ID: <b>LCS-69364-69364</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/8/2015 04:30 PM</b>		
Client ID:		Run ID: <b>VMS6_150408A</b>			SeqNo: <b>3217890</b>		Prep Date: <b>4/2/2015</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1118	30	1000	0	112	75-125	0			
Ethylbenzene	1118	30	1000	0	112	75-125	0			
m,p-Xylene	2232	60	2000	0	112	80-125	0			
o-Xylene	1078	30	1000	0	108	75-125	0			
Toluene	1118	30	1000	0	112	70-125	0			
Xylenes, Total	3310	90	3000	0	110	75-125	0			
Surr: 1,2-Dichloroethane-d4	968.5	0	1000	0	96.8	70-130	0			
Surr: 4-Bromofluorobenzene	979.5	0	1000	0	98	70-130	0			
Surr: Dibromofluoromethane	989.5	0	1000	0	99	70-130	0			
Surr: Toluene-d8	994.5	0	1000	0	99.4	70-130	0			

The following samples were analyzed in this batch:

1504127-01A	1504127-02A	1504127-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Encana Oil and Gas (USA) Inc.  
**Work Order:** 1504127  
**Project:** C28 Pit Assessment 4.1.15

## QC BATCH REPORT

Batch ID: **R160806**      Instrument ID **MOIST**      Method: **E160.3M**

MBLK		Sample ID: <b>WBLKS-R160806</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216255</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	0.03	0.050								J	

LCS		Sample ID: <b>LCS-R160806</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216254</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	100	0.050	100	0	100	99.5-100.5	0				

DUP		Sample ID: <b>1504103-01B DUP</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216228</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	27.97	0.050	0	0	0		27.62	1.26	20		

DUP		Sample ID: <b>1504123-08A DUP</b>				Units: % of sample			Analysis Date: <b>4/7/2015 02:20 PM</b>		
Client ID:		Run ID: <b>MOIST_150407A</b>		SeqNo: <b>3216244</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	6.13	0.050	0	0	0		6.1	0.491	20		

**The following samples were analyzed in this batch:**

1504127-01B	1504127-02B	1504127-03B
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



4/1/2015

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Nick Martinez  
ALS Environmental  
127 E. 1st Street

Origin ID: RILA



Ship Date: 01APR15  
ActWgt: 55.0 LB  
CAD: 2284840/NET3610

Dims: 24 X 15 X 15 IN

PARACHUTE, CO 81635

Delivery Address Bar Code



SHIP TO: (616) 399-6970  
sample receiving  
ALS Laboratory Group  
3352 128TH AVE

BILL SENDER

Ref # 040115-1  
Invoice #  
PO # Parachute  
Dept #

HOLLAND, MI 49424

THU - 02 APR 10:30A  
PRIORITY OVERNIGHT

2 of 2

MP# 7732 7423 2210

0283

Mstr# 7732 7423 1923

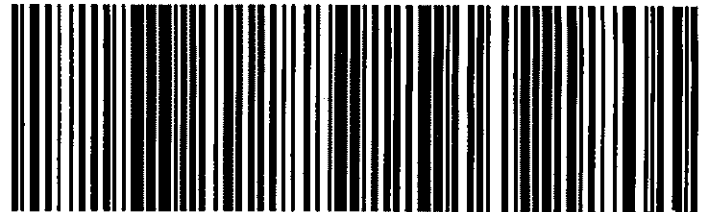
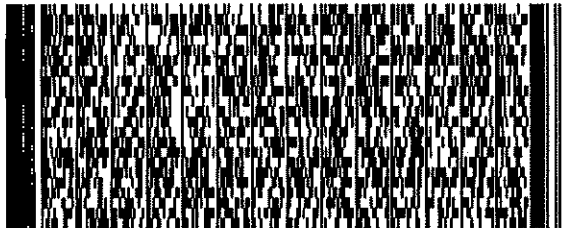
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