

State of Colorado
Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY

REM 9498
Document 2144988
Date 02/10/2016

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe): _____

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 100185

Name of Operator: Encana Oil & Gas (USA)

Address: 143 Diamond Avenue

City: Parachute State: CO Zip: 81635

Contact Name and Telephone:

Matt Kasten

No: 970.285.2925

Fax: 970.285.2705

API Number: 443659 [Spill ID]

County: Garfield

Facility Name: Edson & Scholl

Facility Number: 68S96W/11SESW

Well Name: Edson & Scholl 11-14 (ON11)[Facility Name/No]

Well Number: 324424 [Location ID]

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SESW, Sec. 11, T8S, R96W, 6th PM Latitude: 39.359091 Longitude: -108.078203

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Produced water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Non-Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Potts Loam, 6 to 12 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): According to the COGCC GIS OnLine mapping service there are 0 surface water receptors and 3 water wells within 1/4 mile of the pad.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):

- ☐ Soils
☐ Vegetation
☐ Groundwater
☐ Surface Water

Extent of Impact:

Future progress to Remediation will be detailed in the
Form 4 ROWC/NOC

How Determined:

Future progress to Remediation will be detailed in the
Form 4 ROWC/NOC

REMEDIALTION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

See attached.

Describe how source is to be removed:

See attached.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

See attached.



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

See attached.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

See attached.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

See attached.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

See attached.

*TBD - To Be Determined

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: *TBD Date Site Investigation Completed: *TBD Date Remediation Plan Submitted: 02/10/2016
Remediation Start Date: *TBD Anticipated Completion Date: *TBD Actual Completion Date: *TBD

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

Print Name: Matt Kasten

Signed: matt.kasten@encana.com

Digitally signed by Matt Kasten
DN: cn=Matt Kasten, o=Encana, ou=Environmental NW Region
Date: 2016.02.10 16:58:12 -0700

Title: Environmental Field Contractor

Date: 02/10/2016

OGCC Approved: Carlos A Lujan, Ph.D.

Title: Digitally signed by Carlos A Lujan, Ph.D.
DN: cn=Carlos A Lujan, Ph.D., o=Colorado Oil and Gas Conservation Commission (COGCC), ou=Environmental NW Region
email=carlos.lujan@colorado.gov, c=US
Date: 2016.02.11 16:37:52 -0700

Date: _____

Form 27**ON11 (324424)****Dump Line Release [Spill ID – 443659]**

This Form 27 (Site Investigation and Remediation Workplan) was prepared for the purpose of generating a remediation project number in support of dump line release (Spill ID - 443659) at the ON11 well pad (Location ID – 324424) in Encana Oil & Gas (USA) Inc. (Encana's) Orchard area of operation in Garfield County.

REMEDIATION WORKPLAN**Describe initial action taken (if previously provided, refer to that form or document):**

* Please see initial and supplemental Form 19

Spill ID: 443659

Document Number(s): 400922263 & 400936782.

Describe how source is to be removed:

During the discovery, a majority of impacted material was removed via hydro-vac for pipeline repair. Initial samples were collected from the open trench. Impacted material was transported to a disposal facility. New material was imported in for backfilling purposes.

The release was delineated via drill rig and impacts were found at approximately 8'-8.5' bgs near the point of release. The impacted area is very close to the dump line failure and is within multiple pressurized lines. Due to the proximity; Encana requests the remainder of impacted material be left in place and allowed to remediate via bio-vent wells.

*Please see LTE ROWC to view sampling data, boring logs and bio-vent locations.

Electric Conductivity (EC), Sodium Adsorption Ratio (SAR), and pH were also identified to be contaminants of concern; but with Encana's standard reclamation objectives, inorganics in soil would be dealt with during final reclamation.

Arsenic was also identified to be above the allowable concentration; but is within the area for background sampling results.

Describe how remediation of existing impact is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Residual impacts will be treated in place via bio-vent wells.

This location will be added to a rotation to receive active air injection/recovery to speed up the remediation process. Periodic vent sampling will be conducted to evaluate the impacted area. Project data will be provided to the COGCC in the Form 4 (Report of Work Completed/Progress Report).

If groundwater has been impacted, described proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Ground water was not expected to be impacted and borings did not locate ground water during the investigation.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Reclamation will not take place until the well pad is up for final closure. When the location is up for reclaim, plans will be submitted to demonstrate Encana's efforts.



Form 27
ON11 (324424)
Dump Line Release [Spill ID – 443659]

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing. Is further site investigation required? If yes, describe:

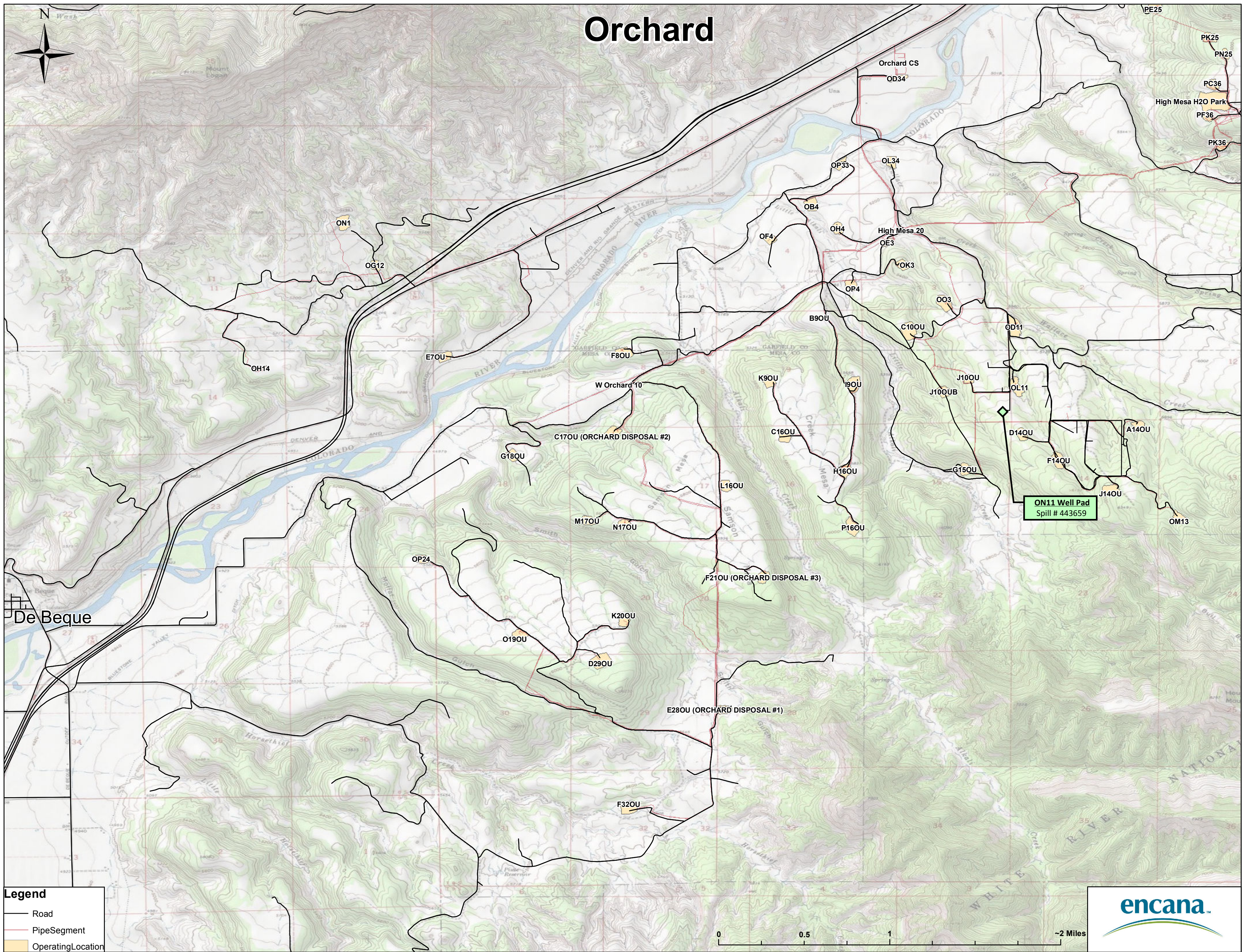
The site investigation for this project will be carried out as described above. All future analytical data collected in support of this remediation project will be provided to the COGCC in the Form 4 (Report of Work Completed and Notification of Completion). Previous sampling data along with a site diagram are attached to this Form 27.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Final disposition of E&P waste would be detailed in the Form 4 (Report of Work Completed and Notification of Completion) submitted following successful completion of activities.

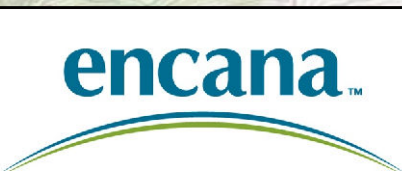


Orchard



Legend

- Road
- PipeSegment
- OperatingLocation

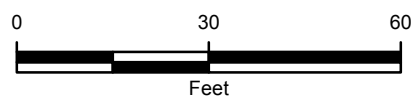




LEGEND

- SOIL SAMPLE LOCATION

IMAGE COURTESY OF ESRI



SITE DIAGRAM
ON11
MESA COUNTY, COLORADO

ENCANA OIL & GAS (USA) INC.



				Organic Compounds in Soil (mg/kg (ppm))																		Inorganics in Soil			Metals in Soil (mg/kg (ppm))														
Allowable Concentration -->				500		85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000			(-12)	(6-9)	0.39	15000	70	120000	23	3100	400	23	1600	390	390	23000		
Location	Sample Date:	Sample Matrix	Matrix Notes	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	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-CD)pyrene	Naphthalene	Pyrene	EC (<4 mmhos/cm or 2x background)	SAR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nickel (soluble salts)	Selenium	Silver	Zinc	
ON11	10/15/15	Spill	S wall 4'	1070	270	800	0.085	0.54	0.12	3.9														26	79	7.9	14	670	<0.071	21	<0.35	19	9.7	0.022	28	0.42	<0.046	40	
ON11	10/15/15	Spill	PB 6'	9600	1000	8600	1.6	11	1.7	36	<0.0030	<0.0039	<0.0049	<0.0028	<0.0051	<0.0017	<0.0068	<0.0026	<0.0050	0.82	<0.0050	2.4	<0.0061																
ON11	10/15/15	Spill	N wall 5'	6000	1500	4500	1	6.8	1.5	31																													
ON11	10/15/15	Spill	W wall 4'	6000	2300	3700	2.4	23	3.3	76																													
ON11	10/15/15	Spill	E wall 4'	447	87	360	<0.0079	0.027	<0.0082	0.14																													
ON11	12/18/15	Spill	SBW-01 [19-20']	7.9	U	7.9	U	U	U	U	0.017	0.011	0.031	0.032	0.0097	0.022	0.013	U	0.023	0.0081	U	0.031	0.032	25	71	8.8	13	180	0.2	16	U	14	10	0.0019	16	0.57	U	51	
ON11	12/18/15	Spill	SBW-01 [24-24.5']	10	U	10	U	U	U	U	0.016	0.01	0.026	U	U	0.015	0.0098	U	0.018	0.0078	U	0.016	0.029	17	34	8.8	13	270	0.27	15	U	18	13	0.026	14	0.89	U	56	
ON11	12/18/15	Spill	SBE-02 [20-21']	9.5	U	9.5	U	U	U	U	0.008	0.0065	0.022	U	U	0.012	0.0076	U	0.012	U	U	0.011	0.02	1.5	3.4	8.9	13	270	0.18	22	U	20	12	0.023	25	0.75	U	59	
ON11	12/18/15	Spill	SBE-02 [34-36']	4.5	U	4.5	U	U	U	U	0.009	0.0059	0.022	U	U	0.011	U	U	0.011	U	0.0082	0.0094	0.02	0.74	1.4	8.6	16	220	0.17	21	U	20	11	0.033	23	0.7	U	66	
ON11	12/17/15	Spill	SBE-01 [8-8.5']	4928	108	4820	ND	ND	0.242	0.316	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28	ND	ND	ND	4.16	68.5	9.5	12	335	ND	29.9	ND	25.3	14.7	ND	33.2	ND	ND	48.6	
ON11	12/17/15	Spill	SBE-01 [14.75-16']	6.03	ND	6.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.25	79	9.3	8.53	176	ND	19.7	ND	15.7	11.9	ND	16.2	ND	ND	44.2	
ON11	12/17/15	Spill	SBS-01 [14-16']	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25	0.442	9.07	8.05	147	ND	18.8	ND	13.8	10.7	ND	15.2	ND	ND	43.1	
ON11	12/17/15	Spill	SBS-01 [20-22']	8.19	ND	8.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.233	0.526	9.04	8.09	280	ND	24.2	ND	16.9	14.8	0.0288	17.1	ND	ND	40.4	
ON11	12/17/15	Spill	SBNW-01 [15-17']	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.185	1.02	8.83	10.6	240	ND	32.2	ND	25.8	12.1	ND	27.3	ND	ND	59.3	
ON11	12/17/15	Spill	SBNW-01 [20-22']	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.225	0.9	9.21	8.9	161	ND	17.9	ND	13.1	10.6	ND	13.7	ND	ND	38.6	
ON11	12/16/15	Spill	SBN-01 [10-11']	33.7	ND	33.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.205	0.662	8.72	10.6	248	ND	25	ND	20.5	13.8	ND	20.7	ND	ND	44.7	
ON11	12/16/15	Spill	SBN-01 [20-20.5']	4.69	ND	4.69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.117	0.819	9.03	11	245	ND	28.4	ND	22.8	12.4	ND	29.8	ND	ND	48.9	



January 20, 2016

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

**RE: Report of Work Completed
ON11 (Location ID – 324424)
Spill or Release (Spill/Release Point – 443659)
Well Installation and In-Situ Characterization
Mesa County, Colorado**

Dear Mr. Middleton:

LT Environmental, Inc. (LTE), under the direction of Encana Oil and Gas, Inc. (Encana), conducted site assessment activities associated with well installation and in-situ characterization of a hydrocarbon release (Spill/Release Point – 443659) at the ON11 (Site), located within the Grand Valley area of operation in Mesa County, Colorado. This correspondence is a summary of the work completed by LTE in December, 2015.

Site Assessment Activities

From December 16 through 18, 2015, LTE advanced 6 soil borings at depths ranging from 20 to 35 feet below ground surface associated with a hydrocarbon release at the Site. Five of the soil borings were converted to soil vapor extraction wells (SVE) to remediate residual hydrocarbon impacts. Soil confirmation samples were collected from the depth of highest hydrocarbon impact as indicated by field screening, and vertical soil clearance samples were collected from at least 5 feet below any observed impacted area. Samples were 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 and SVE well locations. Boring Logs and Well Completion Diagrams are included as an attachment.

Analytical Results and Remediation

Laboratory analytical results indicate concentrations of TPH, arsenic, pH, EC, and SAR 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 have been secured to the top of wells SVE-E01, SVE-S01, SVE-NW02, SVE-W01, and SVE-E02 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.

Quarterly 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'.

Chris McKisson
Project Manager

A handwritten signature in black ink, appearing to read 'Robert Fishburn'.

Robert Fishburn, P.G
Senior Hydrogeologist

Attachments

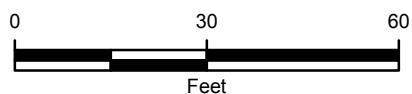
Site Diagram
Laboratory Results Summary Table
Laboratory Analytical Reports
Boring Logs/Well Completion Diagrams



LEGEND

- SOIL BORING LOCATION
- SOIL BORING/SOIL VAPOR EXTRACTION WELL

IMAGE COURTESY OF ESRI



SITE DIAGRAM
ON11
SESW SEC 11-T8S-R96W
MESA COUNTY, COLORADO

ENCANA OIL & GAS (USA) INC.





23-Oct-2015

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

Re: **ON11 Excavation Sampling**

Work Order: **15101062**

Dear Brett,

ALS Environmental received 5 samples on 16-Oct-2015 10:15 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 27.

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

Sincerely,

A handwritten signature in black ink that reads "Les Arnold".

Electronically approved by: Les Arnold

Les Arnold
Senior 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 The ALS logo, a stylized 'A' with a flame-like shape inside.

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Work Order: 15101062

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>
15101062-01	20151015-0N11 (S-Wall) 4'	Soil		10/15/2015 12:50	10/16/2015 10:15	☐
15101062-02	20151015-0N11 (PB) 6'	Soil		10/15/2015 13:00	10/16/2015 10:15	☐
15101062-03	20151015-0N11 (N-Wall) 5'	Soil		10/15/2015 13:05	10/16/2015 10:15	☐
15101062-04	20151015-0N11 (W-Wall) 4'	Soil		10/15/2015 13:10	10/16/2015 10:15	☐
15101062-05	20151015-0N11 (E-Wall) 4'	Soil		10/15/2015 13:15	10/16/2015 10:15	☐

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Work Order: 15101062

Case Narrative

The attached "Sample Receipt Checklist" documents the date of receipt, status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria:

Batch 77704, Method 7196, Hexavalent Chromium; Sample 15101062-02A: The MS and MSD recoveries were below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte.

Batch 77778, Method 8270, SVOC; Sample 15101062-02A: The surrogate recovery was above acceptance criteria due to matrix interference.

NO OTHER DEVIATIONS OR ANOMALIES WERE NOTED.

ALS Group USA, Corp

Date: 23-Oct-15

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Sample ID: 20151015-ON11 (S-Wall) 4'
Collection Date: 10/15/2015 12:50 PM

Work Order: 15101062
Lab ID: 15101062-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 10/20/15		Analyst: IT
DRO (C10-C28)	800		1.6	5.0	mg/Kg-dry	1	10/21/2015 07:02
Surr: 4-Terphenyl-d14	69.3			39-133	%REC	1	10/21/2015 07:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/16/15		Analyst: IT
GRO (C6-C10)	270		1.5	3.0	mg/Kg-dry	1	10/17/2015 04:33
Surr: Toluene-d8	107			50-150	%REC	1	10/17/2015 04:33
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/16/15		Analyst: AK
Benzene	0.085		0.0082	0.036	mg/Kg-dry	1	10/23/2015 02:00
Ethylbenzene	0.12		0.0085	0.036	mg/Kg-dry	1	10/23/2015 02:00
m,p-Xylene	3.2		0.016	0.073	mg/Kg-dry	1	10/23/2015 02:00
o-Xylene	0.70		0.012	0.036	mg/Kg-dry	1	10/23/2015 02:00
Toluene	0.54		0.012	0.036	mg/Kg-dry	1	10/23/2015 02:00
Xylenes, Total	3.9		0.028	0.11	mg/Kg-dry	1	10/23/2015 02:00
Surr: 1,2-Dichloroethane-d4	90.4			70-130	%REC	1	10/23/2015 02:00
Surr: 4-Bromofluorobenzene	108			70-130	%REC	1	10/23/2015 02:00
Surr: Dibromofluoromethane	91.0			70-130	%REC	1	10/23/2015 02:00
Surr: Toluene-d8	91.7			70-130	%REC	1	10/23/2015 02:00
MOISTURE							
			Method: E160.3M				Analyst: TM
Moisture	18		0.025	0.050	% of sample	1	10/21/2015 14:52

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

ALS Group USA, Corp

Date: 23-Oct-15

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Sample ID: 20151015-ON11 (PB) 6'
Collection Date: 10/15/2015 01:00 PM

Work Order: 15101062
Lab ID: 15101062-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 10/20/15		Analyst: IT
DRO (C10-C28)	8,600		42	130	mg/Kg-dry	25	10/21/2015 13:00
Surr: 4-Terphenyl-d14	105			39-133	%REC	25	10/21/2015 13:00
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/16/15		Analyst: IT
GRO (C6-C10)	1,000		15	31	mg/Kg-dry	10	10/17/2015 05:28
Surr: Toluene-d8	99.5			50-150	%REC	10	10/17/2015 05:28
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/21/15		Analyst: LR
Mercury	0.022		0.0013	0.015	mg/Kg-dry	1	10/21/2015 23:57
METALS ANALYSIS BY ICP							
			Method: SW846 6010C		Prep: SW3050B / 10/19/15		Analyst: JEC
Arsenic	14		0.11	0.46	mg/Kg-dry	1	10/20/2015 12:01
Barium	670		0.21	0.46	mg/Kg-dry	1	10/20/2015 12:01
Cadmium	U		0.071	0.92	mg/Kg-dry	1	10/20/2015 12:01
Chromium	21		0.015	0.46	mg/Kg-dry	1	10/20/2015 12:01
Copper	19		0.049	0.92	mg/Kg-dry	1	10/20/2015 12:01
Lead	9.7		0.055	0.46	mg/Kg-dry	1	10/20/2015 12:01
Nickel	28		0.14	0.46	mg/Kg-dry	1	10/20/2015 12:01
Selenium	0.42	J	0.27	0.92	mg/Kg-dry	1	10/20/2015 12:01
Silver	U		0.046	0.46	mg/Kg-dry	1	10/20/2015 12:01
Zinc	40		0.15	0.92	mg/Kg-dry	1	10/20/2015 12:01
SOLUBLE CATIONS FOR SAR							
			Method: SW846 6010C		Prep: USDA Method 20B / 10/21/15		Analyst: JEC
Calcium	270		0.22	5.0	mg/L	10	10/21/2015 12:32
Magnesium	15		0.22	2.0	mg/L	10	10/21/2015 12:32
Sodium	4,900		2.4	20	mg/L	100	10/21/2015 13:44
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/21/15		Analyst: JEC
Sodium Adsorption Ratio	79		0.010	0.010	none	1	10/21/2015
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3541 / 10/21/15		Analyst: RS
Acenaphthene	U		0.0030	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Anthracene	U		0.0039	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Benzo(a)anthracene	U		0.0049	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Benzo(a)pyrene	U		0.0017	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Benzo(b)fluoranthene	U		0.0028	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Benzo(k)fluoranthene	U		0.0051	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Chrysene	U		0.0068	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Dibenzo(a,h)anthracene	U		0.0026	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Fluoranthene	U		0.0050	0.0081	mg/Kg-dry	1	10/22/2015 07:30

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

ALS Group USA, Corp

Date: 23-Oct-15

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Sample ID: 20151015-ON11 (PB) 6'
Collection Date: 10/15/2015 01:00 PM

Work Order: 15101062
Lab ID: 15101062-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.82		0.0045	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Indeno(1,2,3-cd)pyrene	U		0.0050	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Naphthalene	2.4		0.010	0.040	mg/Kg-dry	5	10/23/2015 02:44
Pyrene	U		0.0061	0.0081	mg/Kg-dry	1	10/22/2015 07:30
Surr: 2-Fluorobiphenyl	55.8			12-100	%REC	1	10/22/2015 07:30
Surr: 4-Terphenyl-d14	93.3			25-137	%REC	1	10/22/2015 07:30
Surr: Nitrobenzene-d5	110	S		37-107	%REC	1	10/22/2015 07:30
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 10/16/15		Analyst: AK
Benzene	1.6		0.084	0.37	mg/Kg-dry	10	10/23/2015 02:24
Ethylbenzene	1.7		0.087	0.37	mg/Kg-dry	10	10/23/2015 02:24
m,p-Xylene	30		0.17	0.74	mg/Kg-dry	10	10/23/2015 02:24
o-Xylene	5.7		0.12	0.37	mg/Kg-dry	10	10/23/2015 02:24
Toluene	11		0.12	0.37	mg/Kg-dry	10	10/23/2015 02:24
Xylenes, Total	36		0.29	1.1	mg/Kg-dry	10	10/23/2015 02:24
Surr: 1,2-Dichloroethane-d4	87.4			70-130	%REC	10	10/23/2015 02:24
Surr: 4-Bromofluorobenzene	98.7			70-130	%REC	10	10/23/2015 02:24
Surr: Dibromofluoromethane	74.6			70-130	%REC	10	10/23/2015 02:24
Surr: Toluene-d8	90.2			70-130	%REC	10	10/23/2015 02:24
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/21/15		Analyst: JB
Electrical Conductivity @ Saturation	26		0.0055	0.050	mmhos/cm @25°	10	10/21/2015 15:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JJG
Chromium, Trivalent	21		0.31	0.62	mg/Kg-dry	1	10/21/2015 16:36
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/18/15		Analyst: MB
Chromium, Hexavalent	U		0.35	1.2	mg/Kg-dry	1	10/19/2015 16:00
MOISTURE			Method: E160.3M				Analyst: TM
Moisture	19		0.025	0.050	% of sample	1	10/21/2015 14:52
PH			Method: SW9045D		Prep: EXTRACT / 10/19/15		Analyst: STP
pH	7.9		0		s.u.	1	10/19/2015 16:15

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

ALS Group USA, Corp

Date: 23-Oct-15

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Sample ID: 20151015-ON11 (N-Wall) 5'
Collection Date: 10/15/2015 01:05 PM

Work Order: 15101062
Lab ID: 15101062-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 10/20/15		Analyst: IT
DRO (C10-C28)	4,500		17	52	mg/Kg-dry	10	10/21/2015 13:30
Surr: 4-Terphenyl-d14	96.2			39-133	%REC	10	10/21/2015 13:30
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/16/15		Analyst: IT
GRO (C6-C10)	1,500		7.6	16	mg/Kg-dry	5	10/17/2015 05:01
Surr: Toluene-d8	106			50-150	%REC	5	10/17/2015 05:01
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/16/15		Analyst: AK
Benzene	1.0		0.085	0.38	mg/Kg-dry	10	10/23/2015 08:04
Ethylbenzene	1.5		0.088	0.38	mg/Kg-dry	10	10/23/2015 08:04
m,p-Xylene	26		0.17	0.75	mg/Kg-dry	10	10/23/2015 08:04
o-Xylene	5.9		0.12	0.38	mg/Kg-dry	10	10/23/2015 08:04
Toluene	6.8		0.12	0.38	mg/Kg-dry	10	10/23/2015 08:04
Xylenes, Total	31		0.29	1.1	mg/Kg-dry	10	10/23/2015 08:04
Surr: 1,2-Dichloroethane-d4	77.8			70-130	%REC	10	10/23/2015 08:04
Surr: 4-Bromofluorobenzene	96.4			70-130	%REC	10	10/23/2015 08:04
Surr: Dibromofluoromethane	70.5			70-130	%REC	10	10/23/2015 08:04
Surr: Toluene-d8	94.8			70-130	%REC	10	10/23/2015 08:04
MOISTURE							
			Method: E160.3M				Analyst: TM
Moisture	20		0.025	0.050	% of sample	1	10/21/2015 14:52

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

ALS Group USA, Corp

Date: 23-Oct-15

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Sample ID: 20151015-ON11 (W-Wall) 4'
Collection Date: 10/15/2015 01:10 PM

Work Order: 15101062
Lab ID: 15101062-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 10/20/15		Analyst: IT
DRO (C10-C28)	3,700		16	50	mg/Kg-dry	10	10/21/2015 14:00
Surr: 4-Terphenyl-d14	55.8			39-133	%REC	10	10/21/2015 14:00
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/16/15		Analyst: IT
GRO (C6-C10)	2,300		15	30	mg/Kg-dry	10	10/17/2015 05:56
Surr: Toluene-d8	101			50-150	%REC	10	10/17/2015 05:56
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/16/15		Analyst: AK
Benzene	2.4		0.083	0.37	mg/Kg-dry	10	10/23/2015 06:51
Ethylbenzene	3.3		0.085	0.37	mg/Kg-dry	10	10/23/2015 06:51
m,p-Xylene	61		0.16	0.73	mg/Kg-dry	10	10/23/2015 06:51
o-Xylene	15		0.12	0.37	mg/Kg-dry	10	10/23/2015 06:51
Toluene	23		0.12	0.37	mg/Kg-dry	10	10/23/2015 06:51
Xylenes, Total	76		0.28	1.1	mg/Kg-dry	10	10/23/2015 06:51
Surr: 1,2-Dichloroethane-d4	71.4			70-130	%REC	10	10/23/2015 06:51
Surr: 4-Bromofluorobenzene	97.7			70-130	%REC	10	10/23/2015 06:51
Surr: Dibromofluoromethane	84.6			70-130	%REC	10	10/23/2015 06:51
Surr: Toluene-d8	104			70-130	%REC	10	10/23/2015 06:51
MOISTURE							
			Method: E160.3M				Analyst: TM
Moisture	18		0.025	0.050	% of sample	1	10/21/2015 14:52

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

ALS Group USA, Corp

Date: 23-Oct-15

Client: Encana Oil and Gas (USA) Inc.
Project: ON11 Excavation Sampling
Sample ID: 20151015-ON11 (E-Wall) 4'
Collection Date: 10/15/2015 01:15 PM

Work Order: 15101062
Lab ID: 15101062-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 10/20/15		Analyst: IT
DRO (C10-C28)	360		1.6	4.8	mg/Kg-dry	1	10/21/2015 09:02
Surr: 4-Terphenyl-d14	77.1			39-133	%REC	1	10/21/2015 09:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/16/15		Analyst: IT
GRO (C6-C10)	87		1.4	2.9	mg/Kg-dry	1	10/17/2015 02:28
Surr: Toluene-d8	115			50-150	%REC	1	10/17/2015 02:28
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/16/15		Analyst: AK
Benzene	U		0.0079	0.035	mg/Kg-dry	1	10/23/2015 07:15
Ethylbenzene	U		0.0082	0.035	mg/Kg-dry	1	10/23/2015 07:15
m,p-Xylene	0.067	J	0.016	0.070	mg/Kg-dry	1	10/23/2015 07:15
o-Xylene	0.077		0.011	0.035	mg/Kg-dry	1	10/23/2015 07:15
Toluene	0.027	J	0.012	0.035	mg/Kg-dry	1	10/23/2015 07:15
Xylenes, Total	0.14		0.027	0.11	mg/Kg-dry	1	10/23/2015 07:15
Surr: 1,2-Dichloroethane-d4	78.4			70-130	%REC	1	10/23/2015 07:15
Surr: 4-Bromofluorobenzene	99.0			70-130	%REC	1	10/23/2015 07:15
Surr: Dibromofluoromethane	80.2			70-130	%REC	1	10/23/2015 07:15
Surr: Toluene-d8	73.6			70-130	%REC	1	10/23/2015 07:15
MOISTURE							
			Method: E160.3M				Analyst: TM
Moisture	15		0.025	0.050	% of sample	1	10/21/2015 14:52

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

<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
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77702** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-77702-77702				Units: mg/Kg		Analysis Date: 10/21/2015 02:34 A		
Client ID:		Run ID: GC8_151020A				SeqNo: 3520416		Prep Date: 10/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
Surr: 4-Terphenyl-d14	1.568	0	2	0	78.4	39-133		0		

LCS		Sample ID: DLCSS1-77702-77702				Units: mg/Kg		Analysis Date: 10/21/2015 03:04 A		
Client ID:		Run ID: GC8_151020A				SeqNo: 3520417		Prep Date: 10/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	166.8	5.0	200	0	83.4	61-109		0		
Surr: 4-Terphenyl-d14	1.245	0	2	0	62.2	39-133		0		

MS		Sample ID: 15101009-01B MS				Units: mg/Kg		Analysis Date: 10/21/2015 04:33 A		
Client ID:		Run ID: GC8_151020A				SeqNo: 3520419		Prep Date: 10/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	210.3	4.2	166.6	116.8	56.1	48-110		0		
Surr: 4-Terphenyl-d14	1.152	0	1.666	0	69.2	39-133		0		

MSD		Sample ID: 15101009-01B MSD				Units: mg/Kg		Analysis Date: 10/21/2015 05:03 A		
Client ID:		Run ID: GC8_151020A				SeqNo: 3520420		Prep Date: 10/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	230.3	4.1	163.4	116.8	69.4	48-110	210.3	9.1	30	
Surr: 4-Terphenyl-d14	1.418	0	1.634	0	86.8	39-133	1.152	20.7	30	

The following samples were analyzed in this batch:

15101062-01A	15101062-02A	15101062-03A
15101062-04A	15101062-05A	

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77583** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-77583-77583				Units: µg/Kg		Analysis Date: 10/16/2015 11:58 PM		
Client ID:		Run ID: GC9_151016A				SeqNo: 3516099		Prep Date: 10/16/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
Surr: Toluene-d8	5527	0	5000	0	111	50-150	0			

LCS		Sample ID: LCS-77583-77583				Units: µg/Kg		Analysis Date: 10/16/2015 10:44 PM		
Client ID:		Run ID: GC9_151016A				SeqNo: 3516098		Prep Date: 10/16/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	435300	2,500	500000	0	87.1	70-130	0			
Surr: Toluene-d8	5372	0	5000	0	107	50-150	0			

MS		Sample ID: 15101009-01A MS				Units: µg/Kg		Analysis Date: 10/17/2015 09:46 A		
Client ID:		Run ID: GC9_151016A				SeqNo: 3516122		Prep Date: 10/16/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	519100	2,500	500000	0	104	70-130	0			
Surr: Toluene-d8	5276	0	5000	0	106	50-150	0			

MSD		Sample ID: 15101009-01A MSD				Units: µg/Kg		Analysis Date: 10/17/2015 10:11 A		
Client ID:		Run ID: GC9_151016A				SeqNo: 3516123		Prep Date: 10/16/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	509300	2,500	500000	0	102	70-130	519100	1.9	30	
Surr: Toluene-d8	5366	0	5000	0	107	50-150	5276	1.68	30	

The following samples were analyzed in this batch:

15101062-01A	15101062-02A	15101062-03A
15101062-04A	15101062-05A	

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77773** Instrument ID **HG1** Method: **SW7471B**

MBLK				Sample ID: MBLK-77773-77773				Units: mg/Kg			Analysis Date: 10/21/2015 04:42 PM			
Client ID:				Run ID: HG1_151021A				SeqNo: 3522160			Prep Date: 10/21/2015		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS				Sample ID: LCS-77773-77773				Units: mg/Kg			Analysis Date: 10/21/2015 04:44 PM			
Client ID:				Run ID: HG1_151021A				SeqNo: 3522161			Prep Date: 10/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Mercury 0.1867 0.020 0.1665 0 112 80-120 0

MS				Sample ID: 15101057-05AMS				Units: mg/Kg			Analysis Date: 10/21/2015 04:49 PM			
Client ID:				Run ID: HG1_151021A				SeqNo: 3522163			Prep Date: 10/21/2015		DF: 1	
Analyte				Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1311 0.014 0.1185 0.001103 110 75-125 0

MSD		Sample ID: 15101057-05AMSD					Units: mg/Kg		Analysis Date: 10/21/2015 04:51 PM		
Client ID:			Run ID: HG1_151021A			SeqNo: 3522164		Prep Date: 10/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1275 0.014 0.1174 0.001103 108 75-125 0.1311 2.77 35

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77667** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: MBLK-77667-77667				Units: mg/Kg		Analysis Date: 10/20/2015 11:45 A				
Client ID:		Run ID: ICP2_151020A		SeqNo: 3519679		Prep Date: 10/19/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.009282	0.25								J
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: LCS-77667-77667				Units: mg/Kg		Analysis Date: 10/20/2015 11:50 A				
Client ID:		Run ID: ICP2_151020A		SeqNo: 3519680		Prep Date: 10/19/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.038	0.25	5	0	101	80-120	0			
Barium	5.205	0.25	5	0	104	80-120	0			
Cadmium	4.81	0.50	5	0	96.2	80-120	0			
Chromium	5.301	0.25	5	0	106	80-120	0			
Copper	5.47	0.50	5	0	109	80-120	0			
Lead	5.027	0.25	5	0	101	80-120	0			
Nickel	5.069	0.25	5	0	101	80-120	0			
Selenium	5.087	0.50	5	0	102	80-120	0			
Silver	4.896	0.25	5	0	97.9	80-120	0			
Zinc	5.533	0.50	5	0	111	80-120	0			

MS Sample ID: 15101122-05AMS				Units: mg/Kg		Analysis Date: 10/20/2015 01:24 PM				
Client ID:		Run ID: ICP2_151020A		SeqNo: 3519707		Prep Date: 10/19/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.95	0.36	7.257	4.427	104	75-125	0			
Barium	42.69	0.36	7.257	36.75	81.9	75-125	0			O
Cadmium	7.151	0.73	7.257	0.02866	98.1	75-125	0			
Chromium	19.56	0.36	7.257	11.15	116	75-125	0			
Copper	15.07	0.73	7.257	8.585	89.3	75-125	0			
Lead	12.57	0.36	7.257	6.629	81.8	75-125	0			
Nickel	22.07	0.36	7.257	16.86	71.8	75-125	0			S
Selenium	7.88	0.73	7.257	0.4338	103	75-125	0			
Silver	7.296	0.36	7.257	0.04285	99.9	75-125	0			
Zinc	30.12	0.73	7.257	20.72	129	75-125	0			S

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77667**

Instrument ID **ICP2**

Method: **SW846 6010C**

MSD				Sample ID: 15101122-05AMSD			Units: mg/Kg		Analysis Date: 10/20/2015 01:29 PM	
Client ID:			Run ID: ICP2_151020A			SeqNo: 3519708		Prep Date: 10/19/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.54	0.36	7.215	4.427	98.5	75-125	11.95	3.55	20	
Barium	39.69	0.36	7.215	36.75	40.8	75-125	42.69	7.28	20	SO
Cadmium	6.978	0.72	7.215	0.02866	96.3	75-125	7.151	2.45	20	
Chromium	18.78	0.36	7.215	11.15	106	75-125	19.56	4.07	20	
Copper	13.78	0.72	7.215	8.585	72.1	75-125	15.07	8.88	20	S
Lead	12.35	0.36	7.215	6.629	79.3	75-125	12.57	1.72	20	
Nickel	21.72	0.36	7.215	16.86	67.3	75-125	22.07	1.63	20	S
Selenium	7.787	0.72	7.215	0.4338	102	75-125	7.88	1.19	20	
Silver	7.095	0.36	7.215	0.04285	97.7	75-125	7.296	2.78	20	
Zinc	28.25	0.72	7.215	20.72	104	75-125	30.12	6.41	20	

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77752** Instrument ID **ICP2** Method: **SW846 6010C**

DUP				Sample ID: 15101009-01CDUP				Units: mg/L			Analysis Date: 10/21/2015 12:26 PM		
Client ID:				Run ID: ICP2_151021A				SeqNo: 3521489		Prep Date: 10/21/2015		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Calcium	296.3	5.0	0	0	0	0-0	339.7	13.6					
Magnesium	145.9	2.0	0	0	0	0-0	165.7	12.7					
Sodium	2266	2.0	0	0	0	0-0	2461	8.26					

DUP				Sample ID: 15101009-01CDUP				Units: none			Analysis Date: 10/21/2015		
Client ID:				Run ID: SAR_151021A				SeqNo: 3521640		Prep Date: 10/21/2015		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Sodium Adsorption Ratio		26.93	0.010	0	0	0		27.37	1.64	50			

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77778** Instrument ID **SVMS5** Method: **SW846 8270D**

MBLK				Sample ID: SBLKS1-77778-77778			Units: µg/Kg		Analysis Date: 10/21/2015 07:06 PM		
Client ID:			Run ID: SVMS5_151021A			SeqNo: 3523944		Prep Date: 10/21/2015		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	1198	0	1667	0	71.9	12-100	0				
Surr: 4-Terphenyl-d14	1617	0	1667	0	97	25-137	0				
Surr: Nitrobenzene-d5	1202	0	1667	0	72.1	37-107	0				

LCS				Sample ID: SLCSS1-77778-77778				Units: µg/Kg		Analysis Date: 10/21/2015 07:29 PM	
Client ID:			Run ID: SVMS5_151021A			SeqNo: 3523945		Prep Date: 10/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	563.7	6.7	666.7	0	84.5	45-110	0				
Anthracene	639.3	6.7	666.7	0	95.9	55-105	0				
Benzo(a)anthracene	669	6.7	666.7	0	100	50-110	0				
Benzo(a)pyrene	655	6.7	666.7	0	98.2	50-110	0				
Benzo(b)fluoranthene	664.3	6.7	666.7	0	99.6	45-115	0				
Benzo(k)fluoranthene	672.3	6.7	666.7	0	101	45-115	0				
Chrysene	667.3	6.7	666.7	0	100	55-110	0				
Dibenzo(a,h)anthracene	643	6.7	666.7	0	96.4	40-125	0				
Fluoranthene	662.3	6.7	666.7	0	99.3	55-115	0				
Fluorene	585.3	6.7	666.7	0	87.8	50-110	0				
Indeno(1,2,3-cd)pyrene	631.3	6.7	666.7	0	94.7	40-120	0				
Naphthalene	543	6.7	666.7	0	81.4	40-105	0				
Pyrene	675	6.7	666.7	0	101	45-125	0				
Surr: 2-Fluorobiphenyl	1397	0	1667	0	83.8	12-100	0				
Surr: 4-Terphenyl-d14	1643	0	1667	0	98.6	25-137	0				
Surr: Nitrobenzene-d5	1371	0	1667	0	82.3	37-107	0				

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77778** Instrument ID **SVMS5** Method: **SW846 8270D**

MS				Sample ID: 15101122-05A MS			Units: µg/Kg		Analysis Date: 10/21/2015 10:45 PM	
Client ID:		Run ID: SVMS5_151021A			SeqNo: 3523949		Prep Date: 10/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	554.7	6.6	658.4	0	84.2	45-110	0			
Anthracene	720.9	6.6	658.4	0	109	55-105	0			S
Benzo(a)anthracene	628.1	6.6	658.4	12.22	93.5	50-110	0			
Benzo(a)pyrene	622.2	6.6	658.4	6.605	93.5	50-110	0			
Benzo(b)fluoranthene	652.4	6.6	658.4	12.22	97.2	45-115	0			
Benzo(k)fluoranthene	646.5	6.6	658.4	5.944	97.3	45-115	0			
Chrysene	619.2	6.6	658.4	6.935	93	55-110	0			
Dibenzo(a,h)anthracene	616.2	6.6	658.4	0	93.6	40-125	0			
Fluoranthene	561.6	6.6	658.4	0	85.3	55-115	0			
Fluorene	611.3	6.6	658.4	0	92.8	50-110	0			
Indeno(1,2,3-cd)pyrene	601.1	6.6	658.4	7.926	90.1	40-120	0			
Naphthalene	515.5	6.6	658.4	0	78.3	40-105	0			
Pyrene	857.2	6.6	658.4	194.5	101	45-125	0			
Surr: 2-Fluorobiphenyl	1158	0	1646	0	70.4	12-100	0			
Surr: 4-Terphenyl-d14	1665	0	1646	0	101	25-137	0			
Surr: Nitrobenzene-d5	954.6	0	1646	0	58	37-107	0			

MSD				Sample ID: 15101122-05A MSD			Units: µg/Kg		Analysis Date: 10/21/2015 11:08 PM	
Client ID:		Run ID: SVMS5_151021A			SeqNo: 3523950		Prep Date: 10/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	553.2	6.5	648.2	0	85.3	45-110	554.7	0.264	30	
Anthracene	660.5	6.5	648.2	0	102	55-105	720.9	8.75	30	
Benzo(a)anthracene	591.5	6.5	648.2	12.22	89.4	50-110	628.1	6.01	30	
Benzo(a)pyrene	597.3	6.5	648.2	6.605	91.1	50-110	622.2	4.08	30	
Benzo(b)fluoranthene	620.6	6.5	648.2	12.22	93.9	45-115	652.4	5	30	
Benzo(k)fluoranthene	595.7	6.5	648.2	5.944	91	45-115	646.5	8.19	30	
Chrysene	580.1	6.5	648.2	6.935	88.4	55-110	619.2	6.52	30	
Dibenzo(a,h)anthracene	574.9	6.5	648.2	0	88.7	40-125	616.2	6.94	30	
Fluoranthene	545.1	6.5	648.2	0	84.1	55-115	561.6	2.98	30	
Fluorene	621.6	6.5	648.2	0	95.9	50-110	611.3	1.67	30	
Indeno(1,2,3-cd)pyrene	573.6	6.5	648.2	7.926	87.3	40-120	601.1	4.68	30	
Naphthalene	450.2	6.5	648.2	0	69.4	40-105	515.5	13.5	30	
Pyrene	792.7	6.5	648.2	194.5	92.3	45-125	857.2	7.82	30	
Surr: 2-Fluorobiphenyl	1137	0	1620	0	70.2	12-100	1158	1.82	40	
Surr: 4-Terphenyl-d14	1536	0	1620	0	94.8	25-137	1665	8.01	40	
Surr: Nitrobenzene-d5	841.3	0	1620	0	51.9	37-107	954.6	12.6	40	

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77584** Instrument ID **VMS5** Method: **SW8260B**

MBLK Sample ID: MBLK-77584-77584				Units: µg/Kg			Analysis Date: 10/16/2015 12:45 PM			
Client ID:		Run ID: VMS5_151016A		SeqNo: 3515386		Prep Date: 10/16/2015		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	946	0	1000	0	94.6	70-130	0			
Surr: 4-Bromofluorobenzene	992	0	1000	0	99.2	70-130	0			
Surr: Dibromofluoromethane	927	0	1000	0	92.7	70-130	0			
Surr: Toluene-d8	970.5	0	1000	0	97	70-130	0			

LCS Sample ID: LCS-77584-77584				Units: µg/Kg			Analysis Date: 10/16/2015 11:28 A			
Client ID:		Run ID: VMS5_151016A		SeqNo: 3515385		Prep Date: 10/16/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	977.5	30	1000	0	97.8	75-125	0			
Ethylbenzene	995.5	30	1000	0	99.6	75-125	0			
m,p-Xylene	2082	60	2000	0	104	80-125	0			
o-Xylene	982	30	1000	0	98.2	75-125	0			
Toluene	967	30	1000	0	96.7	70-125	0			
Xylenes, Total	3064	90	3000	0	102	75-125	0			
Surr: 1,2-Dichloroethane-d4	939	0	1000	0	93.9	70-130	0			
Surr: 4-Bromofluorobenzene	1022	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	978	0	1000	0	97.8	70-130	0			
Surr: Toluene-d8	965.5	0	1000	0	96.6	70-130	0			

MS Sample ID: 15101063-02A MS				Units: µg/Kg			Analysis Date: 10/23/2015 08:29 A			
Client ID:		Run ID: VMS8_151022B		SeqNo: 3526293		Prep Date: 10/16/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	920.5	30	1000	0	92	75-125	0			
Ethylbenzene	927	30	1000	0	92.7	75-125	0			
m,p-Xylene	1859	60	2000	46.5	90.6	80-125	0			
o-Xylene	923.5	30	1000	0	92.4	75-125	0			
Toluene	870.5	30	1000	0	87	70-125	0			
Xylenes, Total	2782	90	3000	46	91.2	75-125	0			
Surr: 1,2-Dichloroethane-d4	781.5	0	1000	0	78.2	70-130	0			
Surr: 4-Bromofluorobenzene	1060	0	1000	0	106	70-130	0			
Surr: Dibromofluoromethane	850.5	0	1000	0	85	70-130	0			
Surr: Toluene-d8	902.5	0	1000	0	90.2	70-130	0			

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77584** Instrument ID **VMS5** Method: **SW8260B**

MSD				Sample ID: 15101063-02A MSD			Units: µg/Kg		Analysis Date: 10/23/2015 08:53 A		
Client ID:		Run ID: VMS8_151022B			SeqNo: 3526294		Prep Date: 10/16/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	936	30	1000	0	93.6	75-125	920.5	1.67	30		
Ethylbenzene	936	30	1000	0	93.6	75-125	927	0.966	30		
m,p-Xylene	1964	60	2000	46.5	95.8	80-125	1859	5.47	30		
o-Xylene	951.5	30	1000	0	95.2	75-125	923.5	2.99	30		
Toluene	959.5	30	1000	0	96	70-125	870.5	9.73	30		
Xylenes, Total	2915	90	3000	46	95.6	75-125	2782	4.65	30		
Surr: 1,2-Dichloroethane-d4	747.5	0	1000	0	74.8	70-130	781.5	4.45	30		
Surr: 4-Bromofluorobenzene	1056	0	1000	0	106	70-130	1060	0.331	30		
Surr: Dibromofluoromethane	834	0	1000	0	83.4	70-130	850.5	1.96	30		
Surr: Toluene-d8	958	0	1000	0	95.8	70-130	902.5	5.97	30		

The following samples were analyzed in this batch:

15101062-01A	15101062-02A	15101062-03A
15101062-04A	15101062-05A	

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77682** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-77682-77682				Units: s.u.			Analysis Date: 10/19/2015 04:15 PM		
Client ID:				Run ID: WETCHEM_151019I				SeqNo: 3517550		Prep Date: 10/19/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH	3.97	0	4	0	99.2	90-110	0						

DUP				Sample ID: 15101044-02A DUP				Units: s.u.			Analysis Date: 10/19/2015 04:15 PM		
Client ID:				Run ID: WETCHEM_151019I				SeqNo: 3517552		Prep Date: 10/19/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH	7.89	0	0	0	0	0-0	7.81	1.02	20				

DUP				Sample ID: 15101138-03A DUP				Units: s.u.			Analysis Date: 10/19/2015 04:15 PM		
Client ID:				Run ID: WETCHEM_151019I				SeqNo: 3517562		Prep Date: 10/19/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH	8.24	0	0	0	0	0-0	8.24	0	20				

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77704** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-77704-77704				Units: mg/Kg		Analysis Date: 10/19/2015 04:00 PM		
Client ID:		Run ID: WETCHEM_151019K		SeqNo: 3517717		Prep Date: 10/18/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-77704-77704				Units: mg/Kg		Analysis Date: 10/19/2015 04:00 PM		
Client ID:		Run ID: WETCHEM_151019K		SeqNo: 3517716		Prep Date: 10/18/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.55 1.0 5 0 91 80-120 0

MS		Sample ID: 15101062-02A MS				Units: mg/Kg		Analysis Date: 10/19/2015 04:00 PM		
Client ID: 20151015-ON11 (PB) 6'		Run ID: WETCHEM_151019K		SeqNo: 3517705		Prep Date: 10/18/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2.864 0.97 4.854 0.2255 54.4 75-125 0 S

MS		Sample ID: 15101062-02A MSI				Units: mg/Kg		Analysis Date: 10/19/2015 04:00 PM		
Client ID: 20151015-ON11 (PB) 6'		Run ID: WETCHEM_151019K		SeqNo: 3517707		Prep Date: 10/18/2015		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2562 100 2623 0.2255 97.7 75-125 0

MSD		Sample ID: 15101062-02A MSD				Units: mg/Kg		Analysis Date: 10/19/2015 04:00 PM		
Client ID: 20151015-ON11 (PB) 6'		Run ID: WETCHEM_151019K		SeqNo: 3517706		Prep Date: 10/18/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2.892 0.98 4.902 0.2255 54.4 75-125 2.864 0.976 20 S

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **77752** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 15101009-01C DUP				Units: mmhos/cm @25°		Analysis Date: 10/21/2015 03:30 PM		
Client ID:		Run ID: WETCHEM_151021V			SeqNo: 3521935		Prep Date: 10/21/2015		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	13.93	0.050	0	0	0		14.8	6.06	50	

The following samples were analyzed in this batch:

15101062-02A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15101062
Project: ON11 Excavation Sampling

QC BATCH REPORT

Batch ID: **R174421** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: WBLKS-R174421				Units: % of sample		Analysis Date: 10/21/2015 02:52 PM		
Client ID:		Run ID: MOIST_151021B				SeqNo: 3523280		Prep Date:		DF: 1
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: LCS-R174421				Units: % of sample		Analysis Date: 10/21/2015 02:52 PM		
Client ID:		Run ID: MOIST_151021B				SeqNo: 3523279		Prep Date:		DF: 1
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: 15101057-01A DUP				Units: % of sample		Analysis Date: 10/21/2015 02:52 PM		
Client ID:		Run ID: MOIST_151021B				SeqNo: 3523247		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 6.16 0.050 0 0 0 6.02 2.3 20

DUP		Sample ID: 15101062-05A DUP				Units: % of sample		Analysis Date: 10/21/2015 02:52 PM		
Client ID: 20151015-ON11 (E-Wall) 4'		Run ID: MOIST_151021B				SeqNo: 3523269		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 15.46 0.050 0 0 0 14.65 5.38 20

The following samples were analyzed in this batch:

15101062-01A	15101062-02A	15101062-03A
15101062-04A	15101062-05A	

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



CHAIN OF CUSTODY

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

COC number (for client tracking)

Page 1 of 1

[illegible]

Notes: (a) DW (Drinking water), SW (Surface water), GW (Ground water), WW (Waste water), S (Soil), SL (Sludge), SE (Sediment), OS (Other solid material)

320

ORIGIN ID: RLA (816) 298-1033
 NICK MARTINEZ
 ALS ENVIRONMENTAL PARACHUTE
 PARACHUTE SERVICE CENTER
 127 EAST 1ST ST
 PARACHUTE, CO 81635
 UNITED STATES US

SHIP DATE: 15OCT15
 ACTWGT: 54.00 LB
 CAD: 22448400 NET 3670
 DIMS: 24x15x15 IN

BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL HOLLAND LAB
3352 128TH AVE

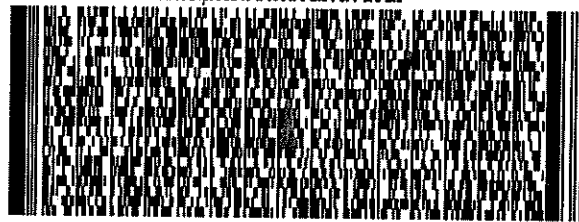
HOLLAND MI 49424

(816) 399-8070

REF: 101515-1

INV:
PO: PARACHUTE

DEPT:

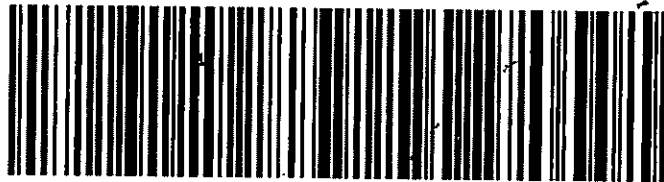
FedEx
ExpressREL#
3785346

TRK#
0201 7747 5305 6279

FRI - 16 OCT 10:30A
 PRIORITY OVERNIGHT

XX HLMA

49424
 MI-US GRR



536LQ401AG1D0

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. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage, whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ALS Parachute Custody Seal

Time: 10:00 Date: 10-15-15
 Name: [Signature]

Sample Receipt Checklist

Client Name: ENCANA2

Date/Time Received: 16-Oct-15 10:15

Work Order: 15101062

Received by: DS

Checklist completed by Diane Shaw 16-Oct-15
eSignature Date

Reviewed by: Lee Arnold 16-Oct-15
eSignature Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>3.2/3.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/16/2015 11:53:12 AM</u>		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

December 31, 2015

EnCana Oil & Gas - Parachute, CO

Sample Delivery Group: L807884
Samples Received: 12/18/2015
Project Number: ON11
Description: ON11 Site Assessment
Site: ON11
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Jarred Willis

Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



¹ Cp: Cover Page	1
² Tc: Table of Contents	2
³ Ss: Sample Summary	3
⁴ Cn: Case Narrative	4
⁵ Sr: Sample Results	5
20151216-ON11 (SBN01) 10-11FT L807884-01	5
20151216-ON11 (SBN01) 20-20.5FT L807884-02	7
⁶ Gl: Glossary of Terms	9
⁷ Al: Accreditations & Locations	10
⁸ Sc: Chain of Custody	11

¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Gl
⁷ Al
⁸ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



20151216-ON11 (SBN01) 10-11FT L807884-01 Solid

Collected by
Dustin Held

Collected date/time
12/16/15 11:55

Received date/time
12/18/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG836938	1	12/22/15 08:55	12/23/15 11:01	LTB
Calculated Results	WG837519	1	12/21/15 18:52	12/23/15 06:46	CCE
Mercury by Method 7471A	WG837029	1	12/21/15 09:13	12/21/15 12:17	BRJ
Metals (ICP) by Method 6010B	WG837519	1	12/21/15 18:52	12/23/15 05:05	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG837224	1	12/21/15 07:48	12/22/15 06:09	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837021	1	12/19/15 19:37	12/20/15 20:31	CLG
Volatile Organic Compounds (GC) by Method 8015/8021	WG837654	5	12/22/15 08:40	12/22/15 16:38	CMJ
Wet Chemistry by Method 2580 B-2011	WG837003	1	12/21/15 10:27	12/21/15 11:00	KBC
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:54	AMC
Wet Chemistry by Method 9045D	WG836921	1	12/19/15 13:48	12/19/15 13:48	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc

20151216-ON11 (SBN01) 20-20.5FT L807884-02 Solid

Collected by
Dustin Held

Collected date/time
12/16/15 14:20

Received date/time
12/18/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG836938	1	12/22/15 08:55	12/23/15 11:01	LTB
Calculated Results	WG837519	1	12/21/15 18:52	12/23/15 06:46	CCE
Mercury by Method 7471A	WG837029	1	12/21/15 09:13	12/21/15 12:26	BRJ
Metals (ICP) by Method 6010B	WG837519	1	12/21/15 18:52	12/23/15 05:08	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG837224	1	12/21/15 07:48	12/22/15 06:31	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837021	1	12/19/15 19:37	12/20/15 20:43	CLG
Volatile Organic Compounds (GC) by Method 8015/8021	WG838036	5	12/23/15 07:43	12/23/15 21:49	LRL
Wet Chemistry by Method 2580 B-2011	WG837003	1	12/21/15 10:27	12/21/15 11:00	KBC
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:54	AMC
Wet Chemistry by Method 9045D	WG836921	1	12/19/15 13:48	12/19/15 13:48	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

ACCOUNT:

EnCana Oil & Gas - Parachute, CO

PROJECT:

ON11

SDG:

L807884

DATE/TIME:

12/31/15 09:29

PAGE:

3 of 11



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis
Technical Service Representative





Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.662		1	12/23/2015 11:01	WG836938

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Gl⁷ Al⁸ Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	25.0		2.00	1	12/23/2015 06:46	WG837519

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	126		1	12/21/2015 11:00	WG837003

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	12/21/2015 15:54	WG836922

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.72		1	12/19/2015 13:48	WG836921

Sample Narrative:

9045D L807884-01 WG836921: 8.72 at 21.6c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	205		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/21/2015 12:17	WG837029

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.6		2.00	1	12/23/2015 05:05	WG837519
Barium	248		0.500	1	12/23/2015 05:05	WG837519
Cadmium	ND		0.500	1	12/23/2015 05:05	WG837519
Chromium	25.0		1.00	1	12/23/2015 05:05	WG837519
Copper	20.5		2.00	1	12/23/2015 05:05	WG837519
Lead	13.8		0.500	1	12/23/2015 05:05	WG837519
Nickel	20.7		2.00	1	12/23/2015 05:05	WG837519
Selenium	ND		2.00	1	12/23/2015 05:05	WG837519
Silver	ND		1.00	1	12/23/2015 05:05	WG837519
Zinc	44.7		5.00	1	12/23/2015 05:05	WG837519



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/22/2015 16:38	WG837654
Toluene	ND		0.0250	5	12/22/2015 16:38	WG837654
Ethylbenzene	ND		0.00250	5	12/22/2015 16:38	WG837654
Total Xylene	ND		0.00750	5	12/22/2015 16:38	WG837654
TPH (GC/FID) Low Fraction	ND		0.500	5	12/22/2015 16:38	WG837654
(S) a,a,a-Trifluorotoluene(FID)	95.8		59.0-128		12/22/2015 16:38	WG837654
(S) a,a,a-Trifluorotoluene(PID)	103		54.0-144		12/22/2015 16:38	WG837654

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	33.7		4.00	1	12/20/2015 20:31	WG837021
(S) o-Terphenyl	72.8		50.0-150		12/20/2015 20:31	WG837021

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/22/2015 06:09	WG837224
Acenaphthene	ND		0.00600	1	12/22/2015 06:09	WG837224
Acenaphthylene	ND		0.00600	1	12/22/2015 06:09	WG837224
Benzo(a)anthracene	ND		0.00600	1	12/22/2015 06:09	WG837224
Benzo(a)pyrene	ND		0.00600	1	12/22/2015 06:09	WG837224
Benzo(b)fluoranthene	ND		0.00600	1	12/22/2015 06:09	WG837224
Benzo(g,h,i)perylene	ND		0.00600	1	12/22/2015 06:09	WG837224
Benzo(k)fluoranthene	ND		0.00600	1	12/22/2015 06:09	WG837224
Chrysene	ND		0.00600	1	12/22/2015 06:09	WG837224
Dibenz(a,h)anthracene	ND		0.00600	1	12/22/2015 06:09	WG837224
Fluoranthene	ND		0.00600	1	12/22/2015 06:09	WG837224
Fluorene	ND		0.00600	1	12/22/2015 06:09	WG837224
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/22/2015 06:09	WG837224
Naphthalene	ND		0.0200	1	12/22/2015 06:09	WG837224
Phenanthrene	ND		0.00600	1	12/22/2015 06:09	WG837224
Pyrene	ND		0.00600	1	12/22/2015 06:09	WG837224
1-Methylnaphthalene	ND		0.0200	1	12/22/2015 06:09	WG837224
2-Methylnaphthalene	ND		0.0200	1	12/22/2015 06:09	WG837224
2-Chloronaphthalene	ND		0.0200	1	12/22/2015 06:09	WG837224
(S) p-Terphenyl-d14	89.3		32.2-131		12/22/2015 06:09	WG837224
(S) Nitrobenzene-d5	88.2		22.1-146		12/22/2015 06:09	WG837224
(S) 2-Fluorobiphenyl	96.5		40.6-122		12/22/2015 06:09	WG837224



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.819		1	12/23/2015 11:01	WG836938

¹ Cp² Tc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	28.4		2.00	1	12/23/2015 06:46	WG837519

³ Ss⁴ Cn

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	125		1	12/21/2015 11:00	WG837003

⁵ Sr⁶ Gl

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:54	WG836922

⁷ Al⁸ Sc

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.03		1	12/19/2015 13:48	WG836921

Sample Narrative:

9045D L807884-02 WG836921: 9.03 at 22.1c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	117		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/21/2015 12:26	WG837029

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.0		2.00	1	12/23/2015 05:08	WG837519
Barium	245		0.500	1	12/23/2015 05:08	WG837519
Cadmium	ND		0.500	1	12/23/2015 05:08	WG837519
Chromium	29.2		1.00	1	12/23/2015 05:08	WG837519
Copper	22.8		2.00	1	12/23/2015 05:08	WG837519
Lead	12.4		0.500	1	12/23/2015 05:08	WG837519
Nickel	29.8		2.00	1	12/23/2015 05:08	WG837519
Selenium	ND		2.00	1	12/23/2015 05:08	WG837519
Silver	ND		1.00	1	12/23/2015 05:08	WG837519
Zinc	48.9		5.00	1	12/23/2015 05:08	WG837519



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/23/2015 21:49	WG838036
Toluene	ND		0.0250	5	12/23/2015 21:49	WG838036
Ethylbenzene	ND		0.00250	5	12/23/2015 21:49	WG838036
Total Xylene	ND		0.00750	5	12/23/2015 21:49	WG838036
TPH (GC/FID) Low Fraction	ND		0.500	5	12/23/2015 21:49	WG838036
(S) a,a,a-Trifluorotoluene(FID)	99.3		59.0-128		12/23/2015 21:49	WG838036
(S) a,a,a-Trifluorotoluene(PID)	103		54.0-144		12/23/2015 21:49	WG838036

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	4.69		4.00	1	12/20/2015 20:43	WG837021
(S) o-Terphenyl	74.2		50.0-150		12/20/2015 20:43	WG837021

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/22/2015 06:31	WG837224
Acenaphthene	ND		0.00600	1	12/22/2015 06:31	WG837224
Acenaphthylene	ND		0.00600	1	12/22/2015 06:31	WG837224
Benzo(a)anthracene	ND		0.00600	1	12/22/2015 06:31	WG837224
Benzo(a)pyrene	ND		0.00600	1	12/22/2015 06:31	WG837224
Benzo(b)fluoranthene	ND		0.00600	1	12/22/2015 06:31	WG837224
Benzo(g,h,i)perylene	ND		0.00600	1	12/22/2015 06:31	WG837224
Benzo(k)fluoranthene	ND		0.00600	1	12/22/2015 06:31	WG837224
Chrysene	ND		0.00600	1	12/22/2015 06:31	WG837224
Dibenz(a,h)anthracene	ND		0.00600	1	12/22/2015 06:31	WG837224
Fluoranthene	ND		0.00600	1	12/22/2015 06:31	WG837224
Fluorene	ND		0.00600	1	12/22/2015 06:31	WG837224
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/22/2015 06:31	WG837224
Naphthalene	ND		0.0200	1	12/22/2015 06:31	WG837224
Phenanthrene	ND		0.00600	1	12/22/2015 06:31	WG837224
Pyrene	ND		0.00600	1	12/22/2015 06:31	WG837224
1-Methylnaphthalene	ND		0.0200	1	12/22/2015 06:31	WG837224
2-Methylnaphthalene	ND		0.0200	1	12/22/2015 06:31	WG837224
2-Chloronaphthalene	ND		0.0200	1	12/22/2015 06:31	WG837224
(S) p-Terphenyl-d14	91.0		32.2-131		12/22/2015 06:31	WG837224
(S) Nitrobenzene-d5	93.5		22.1-146		12/22/2015 06:31	WG837224
(S) 2-Fluorobiphenyl	94.3		40.6-122		12/22/2015 06:31	WG837224



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
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The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

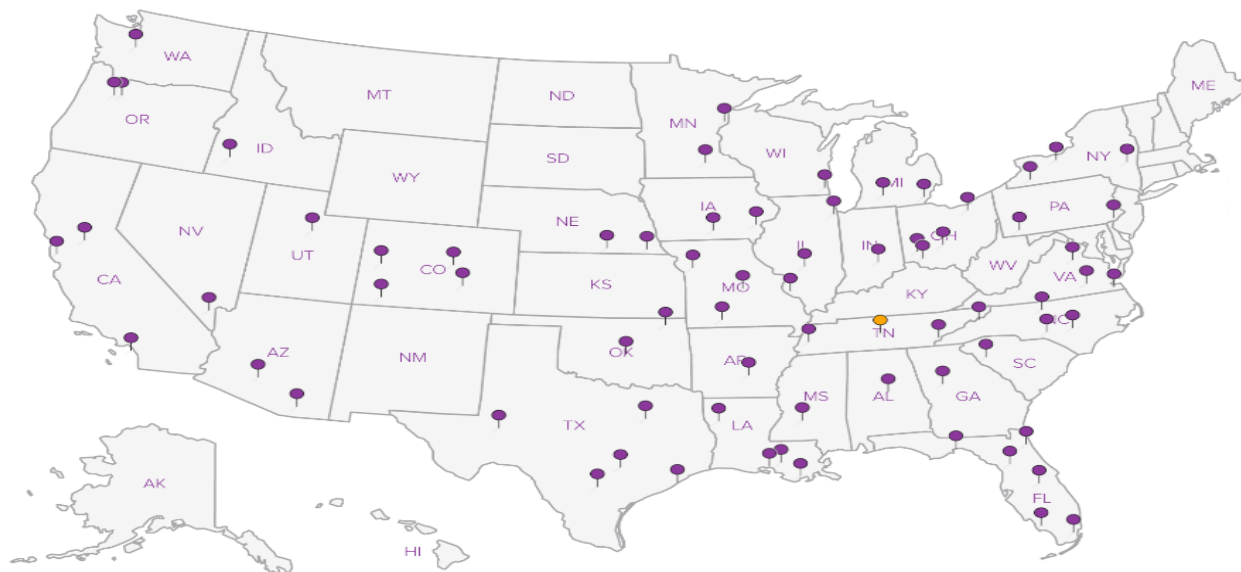
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



84

EnCana Oil & Gas - Parachute, CO

Sample Delivery Group: L808166
Samples Received: 12/19/2015
Project Number: ON11
Description: ON11 Site Assessment
Site: ON11
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Jarred Willis

Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



¹Cp: Cover Page	1
²Tc: Table of Contents	2
³Ss: Sample Summary	3
⁴Cn: Case Narrative	5
⁵Sr: Sample Results	6
20151217-ON11 SBE01 8-8.5FT L808166-01	6
20151217-ON11 SBE01 14.75-16FT L808166-02	8
20151217-ON11 SBS01 14-16FT L808166-03	10
20151217-ON11 SBS01 20-22FT L808166-04	12
20151217-ON11 SBNW01 15-17FT L808166-05	14
20151217-ON11 SVNW01 20-22FT L808166-06	16
⁶Gl: Glossary of Terms	18
⁷Al: Accreditations & Locations	19
⁸Sc: Chain of Custody	20

¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Gl
⁷ Al
⁸ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



20151217-ON11 SBE01 8-8.5FT L808166-01 Solid

Collected by
Dustin Held

Collected date/time
12/17/15 09:20

Received date/time
12/19/15 09:30

¹ Cp

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG837617	1	12/24/15 08:22	12/27/15 19:07	WBD
Calculated Results	WG837621	1	12/23/15 22:26	12/27/15 00:17	WBD
Mercury by Method 7471A	WG837536	1	12/22/15 15:09	12/23/15 09:58	BRJ
Metals (ICP) by Method 6010B	WG837621	1	12/23/15 22:26	12/26/15 17:58	WBD
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG838176	20	12/25/15 01:28	12/28/15 12:15	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837474	20	12/21/15 16:39	12/22/15 19:30	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG837142	50	12/20/15 13:28	12/25/15 23:16	LRL
Wet Chemistry by Method 2580 B-2011	WG838169	1	12/23/15 19:04	12/23/15 20:11	MZ
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:55	AMC
Wet Chemistry by Method 9045D	WG837036	1	12/21/15 11:26	12/21/15 11:26	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc

20151217-ON11 SBE01 14.75-16FT L808166-02 Solid

Collected by
Dustin Held

Collected date/time
12/17/15 10:10

Received date/time
12/19/15 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG837617	1	12/24/15 08:22	12/27/15 19:07	WBD
Calculated Results	WG837621	1	12/23/15 22:26	12/27/15 00:17	WBD
Mercury by Method 7471A	WG837536	1	12/22/15 15:09	12/23/15 10:01	BRJ
Metals (ICP) by Method 6010B	WG837621	1	12/23/15 22:26	12/26/15 18:16	WBD
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG838176	1	12/25/15 01:28	12/27/15 04:55	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837474	1	12/21/15 16:39	12/22/15 12:02	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG837142	5	12/20/15 13:28	12/25/15 23:40	LRL
Wet Chemistry by Method 2580 B-2011	WG838169	1	12/23/15 19:04	12/23/15 20:11	MZ
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:55	AMC
Wet Chemistry by Method 9045D	WG837036	1	12/21/15 11:26	12/21/15 11:26	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

20151217-ON11 SBS01 14-16FT L808166-03 Solid

Collected by
Dustin Held

Collected date/time
12/17/15 13:30

Received date/time
12/19/15 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG837617	1	12/24/15 08:22	12/27/15 19:07	WBD
Calculated Results	WG837621	1	12/23/15 22:26	12/27/15 00:17	WBD
Mercury by Method 7471A	WG837536	1	12/22/15 15:09	12/23/15 10:03	BRJ
Metals (ICP) by Method 6010B	WG837621	1	12/23/15 22:26	12/26/15 23:13	WBD
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG838176	1	12/25/15 01:28	12/27/15 05:17	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837474	1	12/21/15 16:39	12/22/15 11:51	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG837142	5	12/20/15 13:28	12/25/15 19:39	LRL
Wet Chemistry by Method 2580 B-2011	WG838169	1	12/23/15 19:04	12/23/15 20:11	MZ
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:55	AMC
Wet Chemistry by Method 9045D	WG837036	1	12/21/15 11:26	12/21/15 11:26	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

20151217-ON11 SBS01 20-22FT L808166-04 Solid

Collected by
Dustin Held

Collected date/time
12/17/15 13:40

Received date/time
12/19/15 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG837617	1	12/24/15 08:22	12/27/15 19:07	WBD
Calculated Results	WG837621	1	12/23/15 22:26	12/27/15 00:17	WBD
Mercury by Method 7471A	WG837536	1	12/22/15 15:09	12/23/15 10:06	BRJ
Metals (ICP) by Method 6010B	WG837621	1	12/23/15 22:26	12/26/15 23:16	WBD

ACCOUNT:

EnCana Oil & Gas - Parachute, CO

PROJECT:

ON11

SDG:

L808166

DATE/TIME:

12/30/15 17:24

PAGE:

3 of 20



20151217-ON11 SBS01 20-22FT L808166-04 Solid

Collected by
Dustin HeldCollected date/time
12/17/15 13:40Received date/time
12/19/15 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG838176	1	12/25/15 01:28	12/27/15 05:39	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837474	1	12/21/15 16:39	12/22/15 18:01	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG837142	5	12/20/15 13:28	12/26/15 00:04	LRL
Wet Chemistry by Method 2580 B-2011	WG838169	1	12/23/15 19:04	12/23/15 20:11	MZ
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:55	AMC
Wet Chemistry by Method 9045D	WG837036	1	12/21/15 11:26	12/21/15 11:26	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Gl⁷ Al⁸ Sc

20151217-ON11 SBNW01 15-17FT L808166-05 Solid

Collected by
Dustin HeldCollected date/time
12/17/15 16:00Received date/time
12/19/15 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG837617	1	12/24/15 08:22	12/27/15 19:07	WBD
Calculated Results	WG837621	1	12/23/15 22:26	12/28/15 11:00	CCE
Mercury by Method 7471A	WG837536	1	12/22/15 15:09	12/23/15 10:08	BRJ
Metals (ICP) by Method 6010B	WG837621	1	12/23/15 22:26	12/28/15 10:45	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG838176	1	12/25/15 01:28	12/27/15 06:00	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837474	1	12/21/15 16:39	12/22/15 15:24	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG838996	5	12/29/15 10:47	12/30/15 00:51	JHH
Wet Chemistry by Method 2580 B-2011	WG838169	1	12/23/15 19:04	12/23/15 20:11	MZ
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:58	AMC
Wet Chemistry by Method 9045D	WG837036	1	12/21/15 11:26	12/21/15 11:26	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM

20151217-ON11 SVNW01 20-22FT L808166-06 Solid

Collected by
Dustin HeldCollected date/time
12/17/15 16:20Received date/time
12/19/15 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG837617	1	12/24/15 08:22	12/27/15 19:07	WBD
Calculated Results	WG837621	1	12/23/15 22:26	12/27/15 00:17	WBD
Mercury by Method 7471A	WG837536	1	12/22/15 15:09	12/23/15 10:11	BRJ
Metals (ICP) by Method 6010B	WG837621	1	12/23/15 22:26	12/26/15 23:22	WBD
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG838176	1	12/25/15 01:28	12/27/15 06:22	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO	WG837474	1	12/21/15 16:39	12/22/15 12:13	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG838996	5	12/29/15 10:47	12/30/15 01:13	JHH
Wet Chemistry by Method 2580 B-2011	WG838169	1	12/23/15 19:04	12/23/15 20:11	MZ
Wet Chemistry by Method 3060A/7196A	WG836922	1	12/21/15 08:31	12/21/15 15:58	AMC
Wet Chemistry by Method 9045D	WG837036	1	12/21/15 11:26	12/21/15 11:26	AMC
Wet Chemistry by Method 9050AMod	WG837812	1	12/23/15 11:37	12/23/15 11:37	SAM



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	68.5		1	12/27/2015 19:07	WG837617

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	29.9		2.00	1	12/27/2015 00:17	WG837621

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	56		1	12/23/2015 20:11	WG838169

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:55	WG836922

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.50		1	12/21/2015 11:26	WG837036

Sample Narrative:

9045D L808166-01 WG837036: 9.3 at 22.6c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	4160		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/23/2015 09:58	WG837536

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.0		2.00	1	12/26/2015 17:58	WG837621
Barium	335		0.500	1	12/26/2015 17:58	WG837621
Cadmium	ND		0.500	1	12/26/2015 17:58	WG837621
Chromium	29.9		1.00	1	12/26/2015 17:58	WG837621
Copper	25.3		2.00	1	12/26/2015 17:58	WG837621
Lead	14.7	O1	0.500	1	12/26/2015 17:58	WG837621
Nickel	33.2	O1	2.00	1	12/26/2015 17:58	WG837621
Selenium	ND		2.00	1	12/26/2015 17:58	WG837621
Silver	ND		1.00	1	12/26/2015 17:58	WG837621
Zinc	48.6		5.00	1	12/26/2015 17:58	WG837621



Collected date/time: 12/17/15 09:20

L808166

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.0250	50	12/25/2015 23:16	WG837142
Toluene	ND		0.250	50	12/25/2015 23:16	WG837142
Ethylbenzene	0.242		0.0250	50	12/25/2015 23:16	WG837142
Total Xylene	0.316		0.0750	50	12/25/2015 23:16	WG837142
TPH (GC/FID) Low Fraction	108		5.00	50	12/25/2015 23:16	WG837142
(S) a,a,a-Trifluorotoluene(FID)	108		59.0-128		12/25/2015 23:16	WG837142
(S) a,a,a-Trifluorotoluene(PID)	114		54.0-144		12/25/2015 23:16	WG837142

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	4820		80.0	20	12/22/2015 19:30	WG837474
(S) o-Terphenyl	0.000	J7	50.0-150		12/22/2015 19:30	WG837474

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.120	20	12/28/2015 12:15	WG838176
Acenaphthene	ND		0.120	20	12/28/2015 12:15	WG838176
Acenaphthylene	ND		0.120	20	12/28/2015 12:15	WG838176
Benzo(a)anthracene	ND		0.120	20	12/28/2015 12:15	WG838176
Benzo(a)pyrene	ND		0.120	20	12/28/2015 12:15	WG838176
Benzo(b)fluoranthene	ND		0.120	20	12/28/2015 12:15	WG838176
Benzo(g,h,i)perylene	ND		0.120	20	12/28/2015 12:15	WG838176
Benzo(k)fluoranthene	ND		0.120	20	12/28/2015 12:15	WG838176
Chrysene	ND		0.120	20	12/28/2015 12:15	WG838176
Dibenz(a,h)anthracene	ND		0.120	20	12/28/2015 12:15	WG838176
Fluoranthene	ND		0.120	20	12/28/2015 12:15	WG838176
Fluorene	0.280		0.120	20	12/28/2015 12:15	WG838176
Indeno(1,2,3-cd)pyrene	ND		0.120	20	12/28/2015 12:15	WG838176
Naphthalene	ND		0.400	20	12/28/2015 12:15	WG838176
Phenanthrene	0.217		0.120	20	12/28/2015 12:15	WG838176
Pyrene	ND		0.120	20	12/28/2015 12:15	WG838176
1-Methylnaphthalene	0.872		0.400	20	12/28/2015 12:15	WG838176
2-Methylnaphthalene	ND		0.400	20	12/28/2015 12:15	WG838176
2-Chloronaphthalene	ND		0.400	20	12/28/2015 12:15	WG838176
(S) p-Terphenyl-d14	61.3	J7	32.2-131		12/28/2015 12:15	WG838176
(S) Nitrobenzene-d5	1360	J7	22.1-146		12/28/2015 12:15	WG838176
(S) 2-Fluorobiphenyl	78.4	J7	40.6-122		12/28/2015 12:15	WG838176

Sample Narrative:

8270C-SIM L808166-01 WG838176: Dilution due to matrix



Collected date/time: 12/17/15 10:10

L808166

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	79.0		1	12/27/2015 19:07	WG837617

¹ Cp² Tc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	19.7		2.00	1	12/27/2015 00:17	WG837621

³ Ss⁴ Cn

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	66		1	12/23/2015 20:11	WG838169

⁵ Sr⁶ Gl

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:55	WG836922

⁷ Al⁸ Sc

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.30		1	12/21/2015 11:26	WG837036

Sample Narrative:

9045D L808166-02 WG837036: 9.3 at 22.6c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	4250		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/23/2015 10:01	WG837536

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.53		2.00	1	12/26/2015 18:16	WG837621
Barium	176		0.500	1	12/26/2015 18:16	WG837621
Cadmium	ND		0.500	1	12/26/2015 18:16	WG837621
Chromium	19.7		1.00	1	12/26/2015 18:16	WG837621
Copper	15.7		2.00	1	12/26/2015 18:16	WG837621
Lead	11.9		0.500	1	12/26/2015 18:16	WG837621
Nickel	16.2		2.00	1	12/26/2015 18:16	WG837621
Selenium	ND		2.00	1	12/26/2015 18:16	WG837621
Silver	ND		1.00	1	12/26/2015 18:16	WG837621
Zinc	44.2		5.00	1	12/26/2015 18:16	WG837621



Collected date/time: 12/17/15 10:10

L808166

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/25/2015 23:40	WG837142
Toluene	ND		0.0250	5	12/25/2015 23:40	WG837142
Ethylbenzene	ND		0.00250	5	12/25/2015 23:40	WG837142
Total Xylene	ND		0.00750	5	12/25/2015 23:40	WG837142
TPH (GC/FID) Low Fraction	ND		0.500	5	12/25/2015 23:40	WG837142
(S) a,a,a-Trifluorotoluene(FID)	107		59.0-128		12/25/2015 23:40	WG837142
(S) a,a,a-Trifluorotoluene(PID)	113		54.0-144		12/25/2015 23:40	WG837142

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	6.03		4.00	1	12/22/2015 12:02	WG837474
(S) o-Terphenyl	90.7		50.0-150		12/22/2015 12:02	WG837474

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/27/2015 04:55	WG838176
Acenaphthene	ND		0.00600	1	12/27/2015 04:55	WG838176
Acenaphthylene	ND		0.00600	1	12/27/2015 04:55	WG838176
Benzo(a)anthracene	ND		0.00600	1	12/27/2015 04:55	WG838176
Benzo(a)pyrene	ND		0.00600	1	12/27/2015 04:55	WG838176
Benzo(b)fluoranthene	ND		0.00600	1	12/27/2015 04:55	WG838176
Benzo(g,h,i)perylene	ND		0.00600	1	12/27/2015 04:55	WG838176
Benzo(k)fluoranthene	ND		0.00600	1	12/27/2015 04:55	WG838176
Chrysene	ND		0.00600	1	12/27/2015 04:55	WG838176
Dibenz(a,h)anthracene	ND		0.00600	1	12/27/2015 04:55	WG838176
Fluoranthene	ND		0.00600	1	12/27/2015 04:55	WG838176
Fluorene	ND		0.00600	1	12/27/2015 04:55	WG838176
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/27/2015 04:55	WG838176
Naphthalene	ND		0.0200	1	12/27/2015 04:55	WG838176
Phenanthrene	ND		0.00600	1	12/27/2015 04:55	WG838176
Pyrene	ND		0.00600	1	12/27/2015 04:55	WG838176
1-Methylnaphthalene	ND		0.0200	1	12/27/2015 04:55	WG838176
2-Methylnaphthalene	ND		0.0200	1	12/27/2015 04:55	WG838176
2-Chloronaphthalene	ND		0.0200	1	12/27/2015 04:55	WG838176
(S) p-Terphenyl-d14	58.1		32.2-131		12/27/2015 04:55	WG838176
(S) Nitrobenzene-d5	47.7		22.1-146		12/27/2015 04:55	WG838176
(S) 2-Fluorobiphenyl	57.4		40.6-122		12/27/2015 04:55	WG838176



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.442		1	12/27/2015 19:07	WG837617

1 Cp

2 Tc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	18.8		2.00	1	12/27/2015 00:17	WG837621

3 Ss

4 Cn

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	77		1	12/23/2015 20:11	WG838169

5 Sr

6 Gl

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:55	WG836922

7 Al

8 Sc

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.07		1	12/21/2015 11:26	WG837036

Sample Narrative:

9045D L808166-03 WG837036: 9.07 at 22.6c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	250		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/23/2015 10:03	WG837536

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.05		2.00	1	12/26/2015 23:13	WG837621
Barium	147		0.500	1	12/26/2015 23:13	WG837621
Cadmium	ND		0.500	1	12/26/2015 23:13	WG837621
Chromium	18.8		1.00	1	12/26/2015 23:13	WG837621
Copper	13.8		2.00	1	12/26/2015 23:13	WG837621
Lead	10.7		0.500	1	12/26/2015 23:13	WG837621
Nickel	15.2		2.00	1	12/26/2015 23:13	WG837621
Selenium	ND		2.00	1	12/26/2015 23:13	WG837621
Silver	ND		1.00	1	12/26/2015 23:13	WG837621
Zinc	43.1		5.00	1	12/26/2015 23:13	WG837621



Collected date/time: 12/17/15 13:30

L808166

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/25/2015 19:39	WG837142
Toluene	ND		0.0250	5	12/25/2015 19:39	WG837142
Ethylbenzene	ND		0.00250	5	12/25/2015 19:39	WG837142
Total Xylene	ND		0.00750	5	12/25/2015 19:39	WG837142
TPH (GC/FID) Low Fraction	ND		0.500	5	12/25/2015 19:39	WG837142
(S) a,a,a-Trifluorotoluene(FID)	107		59.0-128		12/25/2015 19:39	WG837142
(S) a,a,a-Trifluorotoluene(PID)	112		54.0-144		12/25/2015 19:39	WG837142

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	12/22/2015 11:51	WG837474
(S) o-Terphenyl	106		50.0-150		12/22/2015 11:51	WG837474

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/27/2015 05:17	WG838176
Acenaphthene	ND		0.00600	1	12/27/2015 05:17	WG838176
Acenaphthylene	ND		0.00600	1	12/27/2015 05:17	WG838176
Benzo(a)anthracene	ND		0.00600	1	12/27/2015 05:17	WG838176
Benzo(a)pyrene	ND		0.00600	1	12/27/2015 05:17	WG838176
Benzo(b)fluoranthene	ND		0.00600	1	12/27/2015 05:17	WG838176
Benzo(g,h,i)perylene	ND		0.00600	1	12/27/2015 05:17	WG838176
Benzo(k)fluoranthene	ND		0.00600	1	12/27/2015 05:17	WG838176
Chrysene	ND		0.00600	1	12/27/2015 05:17	WG838176
Dibenz(a,h)anthracene	ND		0.00600	1	12/27/2015 05:17	WG838176
Fluoranthene	ND		0.00600	1	12/27/2015 05:17	WG838176
Fluorene	ND		0.00600	1	12/27/2015 05:17	WG838176
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/27/2015 05:17	WG838176
Naphthalene	ND		0.0200	1	12/27/2015 05:17	WG838176
Phenanthrene	ND		0.00600	1	12/27/2015 05:17	WG838176
Pyrene	ND		0.00600	1	12/27/2015 05:17	WG838176
1-Methylnaphthalene	ND		0.0200	1	12/27/2015 05:17	WG838176
2-Methylnaphthalene	ND		0.0200	1	12/27/2015 05:17	WG838176
2-Chloronaphthalene	ND		0.0200	1	12/27/2015 05:17	WG838176
(S) p-Terphenyl-d14	63.5		32.2-131		12/27/2015 05:17	WG838176
(S) Nitrobenzene-d5	74.2		22.1-146		12/27/2015 05:17	WG838176
(S) 2-Fluorobiphenyl	64.3		40.6-122		12/27/2015 05:17	WG838176



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.526		1	12/27/2015 19:07	WG837617

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	24.2		2.00	1	12/27/2015 00:17	WG837621

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	82		1	12/23/2015 20:11	WG838169

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:55	WG836922

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.04		1	12/21/2015 11:26	WG837036

Sample Narrative:

9045D L808166-04 WG837036: 9.04 at 22.8c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	233		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0288		0.0200	1	12/23/2015 10:06	WG837536

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.09		2.00	1	12/26/2015 23:16	WG837621
Barium	280		0.500	1	12/26/2015 23:16	WG837621
Cadmium	ND		0.500	1	12/26/2015 23:16	WG837621
Chromium	24.2		1.00	1	12/26/2015 23:16	WG837621
Copper	16.9		2.00	1	12/26/2015 23:16	WG837621
Lead	14.8		0.500	1	12/26/2015 23:16	WG837621
Nickel	17.1		2.00	1	12/26/2015 23:16	WG837621
Selenium	ND		2.00	1	12/26/2015 23:16	WG837621
Silver	ND		1.00	1	12/26/2015 23:16	WG837621
Zinc	40.4		5.00	1	12/26/2015 23:16	WG837621



Collected date/time: 12/17/15 13:40

L808166

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/26/2015 00:04	WG837142
Toluene	ND		0.0250	5	12/26/2015 00:04	WG837142
Ethylbenzene	ND		0.00250	5	12/26/2015 00:04	WG837142
Total Xylene	ND		0.00750	5	12/26/2015 00:04	WG837142
TPH (GC/FID) Low Fraction	ND		0.500	5	12/26/2015 00:04	WG837142
(S) a,a,a-Trifluorotoluene(FID)	107		59.0-128		12/26/2015 00:04	WG837142
(S) a,a,a-Trifluorotoluene(PID)	113		54.0-144		12/26/2015 00:04	WG837142

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	8.19		4.00	1	12/22/2015 18:01	WG837474
(S) o-Terphenyl	76.1		50.0-150		12/22/2015 18:01	WG837474

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/27/2015 05:39	WG838176
Acenaphthene	ND		0.00600	1	12/27/2015 05:39	WG838176
Acenaphthylene	ND		0.00600	1	12/27/2015 05:39	WG838176
Benzo(a)anthracene	ND		0.00600	1	12/27/2015 05:39	WG838176
Benzo(a)pyrene	ND		0.00600	1	12/27/2015 05:39	WG838176
Benzo(b)fluoranthene	ND		0.00600	1	12/27/2015 05:39	WG838176
Benzo(g,h,i)perylene	ND		0.00600	1	12/27/2015 05:39	WG838176
Benzo(k)fluoranthene	ND		0.00600	1	12/27/2015 05:39	WG838176
Chrysene	ND		0.00600	1	12/27/2015 05:39	WG838176
Dibenz(a,h)anthracene	ND		0.00600	1	12/27/2015 05:39	WG838176
Fluoranthene	ND		0.00600	1	12/27/2015 05:39	WG838176
Fluorene	ND		0.00600	1	12/27/2015 05:39	WG838176
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/27/2015 05:39	WG838176
Naphthalene	ND		0.0200	1	12/27/2015 05:39	WG838176
Phenanthrene	ND		0.00600	1	12/27/2015 05:39	WG838176
Pyrene	ND		0.00600	1	12/27/2015 05:39	WG838176
1-Methylnaphthalene	ND		0.0200	1	12/27/2015 05:39	WG838176
2-Methylnaphthalene	ND		0.0200	1	12/27/2015 05:39	WG838176
2-Chloronaphthalene	ND		0.0200	1	12/27/2015 05:39	WG838176
(S) p-Terphenyl-d14	56.0		32.2-131		12/27/2015 05:39	WG838176
(S) Nitrobenzene-d5	56.5		22.1-146		12/27/2015 05:39	WG838176
(S) 2-Fluorobiphenyl	57.6		40.6-122		12/27/2015 05:39	WG838176



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.02		1	12/27/2015 19:07	WG837617

¹ Cp² Tc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	32.2		2.00	1	12/28/2015 11:00	WG837621

³ Ss⁴ Cn

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	87		1	12/23/2015 20:11	WG838169

⁵ Sr⁶ Gl

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:58	WG836922

⁷ Al⁸ Sc

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83		1	12/21/2015 11:26	WG837036

Sample Narrative:

9045D L808166-05 WG837036: 8.83 at 22.6c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	185		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/23/2015 10:08	WG837536

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.6		2.00	1	12/28/2015 10:45	WG837621
Barium	240		0.500	1	12/28/2015 10:45	WG837621
Cadmium	ND		0.500	1	12/28/2015 10:45	WG837621
Chromium	32.2		1.00	1	12/28/2015 10:45	WG837621
Copper	25.8		2.00	1	12/28/2015 10:45	WG837621
Lead	12.1		0.500	1	12/28/2015 10:45	WG837621
Nickel	27.3		2.00	1	12/28/2015 10:45	WG837621
Selenium	ND		2.00	1	12/28/2015 10:45	WG837621
Silver	ND		1.00	1	12/28/2015 10:45	WG837621
Zinc	59.3		5.00	1	12/28/2015 10:45	WG837621



Collected date/time: 12/17/15 16:00

L808166

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/30/2015 00:51	WG838996
Toluene	ND		0.0250	5	12/30/2015 00:51	WG838996
Ethylbenzene	ND		0.00250	5	12/30/2015 00:51	WG838996
Total Xylene	ND		0.00750	5	12/30/2015 00:51	WG838996
TPH (GC/FID) Low Fraction	ND		0.500	5	12/30/2015 00:51	WG838996
(S) a,a,a-Trifluorotoluene(FID)	97.0		59.0-128		12/30/2015 00:51	WG838996
(S) a,a,a-Trifluorotoluene(PID)	104		54.0-144		12/30/2015 00:51	WG838996

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	12/22/2015 15:24	WG837474
(S) o-Terphenyl	94.3		50.0-150		12/22/2015 15:24	WG837474

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/27/2015 06:00	WG838176
Acenaphthene	ND		0.00600	1	12/27/2015 06:00	WG838176
Acenaphthylene	ND		0.00600	1	12/27/2015 06:00	WG838176
Benzo(a)anthracene	ND		0.00600	1	12/27/2015 06:00	WG838176
Benzo(a)pyrene	ND		0.00600	1	12/27/2015 06:00	WG838176
Benzo(b)fluoranthene	ND		0.00600	1	12/27/2015 06:00	WG838176
Benzo(g,h,i)perylene	ND		0.00600	1	12/27/2015 06:00	WG838176
Benzo(k)fluoranthene	ND		0.00600	1	12/27/2015 06:00	WG838176
Chrysene	ND		0.00600	1	12/27/2015 06:00	WG838176
Dibenz(a,h)anthracene	ND		0.00600	1	12/27/2015 06:00	WG838176
Fluoranthene	ND		0.00600	1	12/27/2015 06:00	WG838176
Fluorene	ND		0.00600	1	12/27/2015 06:00	WG838176
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/27/2015 06:00	WG838176
Naphthalene	ND		0.0200	1	12/27/2015 06:00	WG838176
Phenanthrene	ND		0.00600	1	12/27/2015 06:00	WG838176
Pyrene	ND		0.00600	1	12/27/2015 06:00	WG838176
1-Methylnaphthalene	ND		0.0200	1	12/27/2015 06:00	WG838176
2-Methylnaphthalene	ND		0.0200	1	12/27/2015 06:00	WG838176
2-Chloronaphthalene	ND		0.0200	1	12/27/2015 06:00	WG838176
(S) p-Terphenyl-d14	62.9		32.2-131		12/27/2015 06:00	WG838176
(S) Nitrobenzene-d5	60.2		22.1-146		12/27/2015 06:00	WG838176
(S) 2-Fluorobiphenyl	67.4		40.6-122		12/27/2015 06:00	WG838176



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.900		1	12/27/2015 19:07	WG837617

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	17.9		2.00	1	12/27/2015 00:17	WG837621

Wet Chemistry by Method 2580 B-2011

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	86		1	12/23/2015 20:11	WG838169

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/21/2015 15:58	WG836922

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.21		1	12/21/2015 11:26	WG837036

Sample Narrative:

9045D L808166-06 WG837036: 9.21 at 22.7c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	225		1	12/23/2015 11:37	WG837812

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/23/2015 10:11	WG837536

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.90		2.00	1	12/26/2015 23:22	WG837621
Barium	161		0.500	1	12/26/2015 23:22	WG837621
Cadmium	ND		0.500	1	12/26/2015 23:22	WG837621
Chromium	17.9		1.00	1	12/26/2015 23:22	WG837621
Copper	13.1		2.00	1	12/26/2015 23:22	WG837621
Lead	10.6		0.500	1	12/26/2015 23:22	WG837621
Nickel	13.7		2.00	1	12/26/2015 23:22	WG837621
Selenium	ND		2.00	1	12/26/2015 23:22	WG837621
Silver	ND		1.00	1	12/26/2015 23:22	WG837621
Zinc	38.6		5.00	1	12/26/2015 23:22	WG837621



Collected date/time: 12/17/15 16:20

L808166

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00250	5	12/30/2015 01:13	WG838996
Toluene	ND		0.0250	5	12/30/2015 01:13	WG838996
Ethylbenzene	ND		0.00250	5	12/30/2015 01:13	WG838996
Total Xylene	ND		0.00750	5	12/30/2015 01:13	WG838996
TPH (GC/FID) Low Fraction	ND		0.500	5	12/30/2015 01:13	WG838996
(S) a,a,a-Trifluorotoluene(FID)	96.5		59.0-128		12/30/2015 01:13	WG838996
(S) a,a,a-Trifluorotoluene(PID)	103		54.0-144		12/30/2015 01:13	WG838996

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015D/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	12/22/2015 12:13	WG837474
(S) o-Terphenyl	97.7		50.0-150		12/22/2015 12:13	WG837474

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/27/2015 06:22	WG838176
Acenaphthene	ND		0.00600	1	12/27/2015 06:22	WG838176
Acenaphthylene	ND		0.00600	1	12/27/2015 06:22	WG838176
Benzo(a)anthracene	ND		0.00600	1	12/27/2015 06:22	WG838176
Benzo(a)pyrene	ND		0.00600	1	12/27/2015 06:22	WG838176
Benzo(b)fluoranthene	ND		0.00600	1	12/27/2015 06:22	WG838176
Benzo(g,h,i)perylene	ND		0.00600	1	12/27/2015 06:22	WG838176
Benzo(k)fluoranthene	ND		0.00600	1	12/27/2015 06:22	WG838176
Chrysene	ND		0.00600	1	12/27/2015 06:22	WG838176
Dibenz(a,h)anthracene	ND		0.00600	1	12/27/2015 06:22	WG838176
Fluoranthene	ND		0.00600	1	12/27/2015 06:22	WG838176
Fluorene	ND		0.00600	1	12/27/2015 06:22	WG838176
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/27/2015 06:22	WG838176
Naphthalene	ND		0.0200	1	12/27/2015 06:22	WG838176
Phenanthrene	ND		0.00600	1	12/27/2015 06:22	WG838176
Pyrene	ND		0.00600	1	12/27/2015 06:22	WG838176
1-Methylnaphthalene	ND		0.0200	1	12/27/2015 06:22	WG838176
2-Methylnaphthalene	ND		0.0200	1	12/27/2015 06:22	WG838176
2-Chloronaphthalene	ND		0.0200	1	12/27/2015 06:22	WG838176
(S) p-Terphenyl-d14	52.8		32.2-131		12/27/2015 06:22	WG838176
(S) Nitrobenzene-d5	59.4		22.1-146		12/27/2015 06:22	WG838176
(S) 2-Fluorobiphenyl	61.7		40.6-122		12/27/2015 06:22	WG838176



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

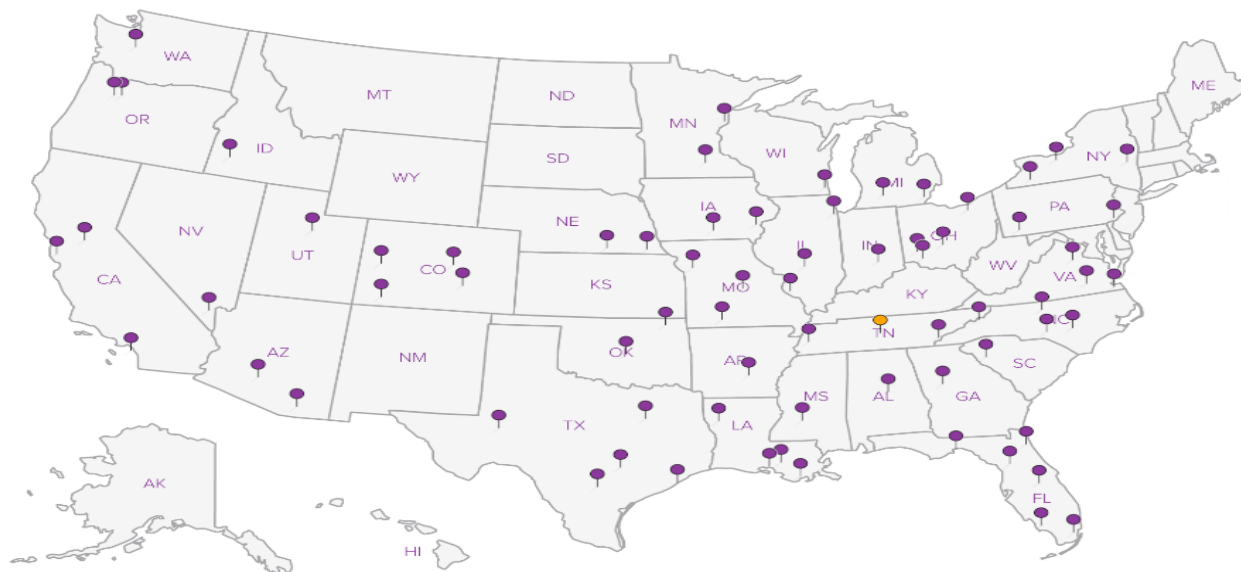
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Encana Oil & Gas (USA)
143 Diamond Avenue
Parachute, CO 81635
ENCANACO-LTENV

Billing Information:

Brett Middleton
 143 Diamond Avenue
 Parachute, CO 81635
 970-285-2653

Report to:

Brett Middleton

Email to:

Brett.Middleton@encana.com

Project Description: ON11 Site Assessment

City/State Collected

Parachute, Co

Phone: 970-285-2653
 FAX:

Client Project #:
 ON11

ESC Key:

ENCANACO-LTENV

Collected by: Dustin Held

Site/Facility ID#: ON11

P.O.#:

Middleton

Collected by (signature):

Rush?

(Lab MUST Be Notified)

Date Results Needed:

Same Day... 200%
 Next Day... 100%
 Two Day... 50%

Email? ☐ No ☒ Yes

FAX? ☒ No ☐ Yes

No.
 of
 Cntrs

Immediately Packed on Ice N

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Analysis/Container/Preservative	Remarks/Contaminant	Sample # (lab only)
20151217-ON11 (SBECH)	Grab	SS	8-8.5'	12/17/15	0920	3	TPH (GRO + DRO)		-01
20151217-ON11 (SBECH)	Grab	SS	14.75-16'	12/17/15	1010	3	TPH (GRO + DRO)		-02
20151217-ON11 (SBSCH)	Grab	SS	14-16'	12/17/15	1330	3	TPH (GRO + DRO)		-03
20151217-ON11 (SBSCH)	Grab	SS	20-22'	12/17/15	1340	3	TPH (GRO + DRO)		-04
20151217-ON11 (SBSCH)	Grab	SS	15-17'	12/17/15	1600	3	TPH (GRO + DRO)		-05
20151217-ON11 (SBSCH)	Grab	SS	20-22'	12/17/15	1620	3	TPH (GRO + DRO)		-06

*Matrix: SS - Sol/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: 12/18 12:30

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Samples returned via: ☐ UPS
☐ FedEx ☐ Courier

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Relinquished by: (Signature)

Date:

Time:

pH Temp

Flow Other



12065 Lebanon Road
 Mt. Juliet, TN 37122

Phone: (800) 767-5859
 Phone: (615) 758-5858
 Fax: (615) 758-5859

G240

L808166

Chain of Custody
 Page 1 of 1

Occurrence ENCANA (lab use only)
 Template/Protocol
 Shipped via

12/19/15 0930
 3-2 18-402

M10



04-Jan-2016

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

Re: **ON 11 Site Assessment**

Work Order: **15121353**

Dear Brett,

ALS Environmental received 4 samples on 23-Dec-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 31.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Les Arnold".

Electronically approved by: Les Arnold

Les Arnold
Senior 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 The ALS logo, a stylized 'A' with a flame-like shape inside.

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RIGHT SOLUTIONS RIGHT PARTNER

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Work Order: 15121353

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>
15121353-01	20151218-ON11 (SBW01) 19-20	Soil	19-20	12/18/2015 08:45	12/23/2015 10:30	☐
15121353-02	20151218-ON11 (SBW01) 24-24.5	Soil	24-24.5	12/18/2015 09:05	12/23/2015 10:30	☐
15121353-03	20151218-ON11 (SBE02) 20-21	Soil	20-21	12/18/2015 11:30	12/23/2015 10:30	☐
15121353-04	20151218-ON11 (SBE02) 34-36	Soil	34-36	12/18/2015 12:50	12/23/2015 10:30	☐

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Work Order: 15121353

Case Narrative

The attached "Sample Receipt Checklist" documents the date of receipt, status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Batch 80713, Method 6010, Metals by ICP; Sample 15121353-03A: The MS and MSD recoveries were outside of the control limits for Barium and Zinc; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for these analytes.

Batch 80713, Method 6010, Metals by ICP; Sample 15121353-03A: The MS and MSD recoveries were below the lower control limit for Copper and Zinc. The corresponding result in the parent sample may be biased low for these analytes.

Batch 80713, Method 6010, Metals by ICP; Sample 15121353-03A: The matrix spike recovery was outside of the control limit for Lead. However, the matrix spike duplicate recovery and the RPD between the MS and MSD were in control. No qualification is required for this analyte.

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBW01) 19-20
Collection Date: 12/18/2015 08:45 AM

Work Order: 15121353
Lab ID: 15121353-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 12/28/15		Analyst: IT
DRO (C10-C28)	7.9		1.6	5.0	mg/Kg-dry	1	12/29/2015 12:01
Surr: 4-Terphenyl-d14	72.2			39-133	%REC	1	12/29/2015 12:01
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 12/23/15		Analyst: IT
GRO (C6-C10)	U		1.5	3.0	mg/Kg-dry	1	12/23/2015 19:17
Surr: Toluene-d8	93.0			50-150	%REC	1	12/23/2015 19:17
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 12/29/15		Analyst: RG
Mercury	0.0019	J	0.0018	0.021	mg/Kg-dry	1	12/29/2015 17:15
METALS ANALYSIS BY ICP							
			Method: SW846 6010C		Prep: SW3050B / 12/28/15		Analyst: JEC
Arsenic	13		0.12	0.50	mg/Kg-dry	1	12/28/2015 12:33
Barium	180		0.23	0.50	mg/Kg-dry	1	12/28/2015 12:33
Cadmium	0.20	J	0.078	1.0	mg/Kg-dry	1	12/28/2015 12:33
Chromium	16		0.016	0.50	mg/Kg-dry	1	12/28/2015 12:33
Copper	14		0.054	1.0	mg/Kg-dry	1	12/28/2015 12:33
Lead	10		0.060	0.50	mg/Kg-dry	1	12/28/2015 12:33
Nickel	16		0.15	0.50	mg/Kg-dry	1	12/28/2015 12:33
Selenium	0.57	J	0.30	1.0	mg/Kg-dry	1	12/28/2015 12:33
Silver	U		0.050	0.50	mg/Kg-dry	1	12/28/2015 12:33
Zinc	51		0.16	1.0	mg/Kg-dry	1	12/28/2015 12:33
SOLUBLE CATIONS FOR SAR							
			Method: SW846 6010C		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Calcium	140		0.22	5.0	mg/L	10	12/30/2015 16:55
Magnesium	60		0.22	2.0	mg/L	10	12/30/2015 16:55
Sodium	4,000		0.24	2.0	mg/L	10	12/30/2015 16:55
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Sodium Adsorption Ratio	71		0.010	0.010	none	1	12/30/2015
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3541 / 12/28/15		Analyst: RS
Acenaphthene	0.017		0.0030	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Anthracene	0.011		0.0039	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Benzo(a)anthracene	0.031		0.0049	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Benzo(a)pyrene	0.022		0.0017	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Benzo(b)fluoranthene	0.032		0.0027	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Benzo(k)fluoranthene	0.0097		0.0050	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Chrysene	0.013		0.0068	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Dibenzo(a,h)anthracene	U		0.0026	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Fluoranthene	0.023		0.0049	0.0081	mg/Kg-dry	1	12/29/2015 20:10

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBW01) 19-20
Collection Date: 12/18/2015 08:45 AM

Work Order: 15121353
Lab ID: 15121353-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.0081		0.0045	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Indeno(1,2,3-cd)pyrene	U		0.0050	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Naphthalene	0.031		0.0021	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Pyrene	0.032		0.0061	0.0081	mg/Kg-dry	1	12/29/2015 20:10
Surr: 2-Fluorobiphenyl	70.4			12-100	%REC	1	12/29/2015 20:10
Surr: 4-Terphenyl-d14	90.9			25-137	%REC	1	12/29/2015 20:10
Surr: Nitrobenzene-d5	72.5			37-107	%REC	1	12/29/2015 20:10
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 12/23/15		Analyst: BG
Benzene	U		0.0082	0.036	mg/Kg-dry	1	12/29/2015 15:58
Ethylbenzene	U		0.0085	0.036	mg/Kg-dry	1	12/29/2015 15:58
m,p-Xylene	U		0.016	0.073	mg/Kg-dry	1	12/29/2015 15:58
o-Xylene	U		0.012	0.036	mg/Kg-dry	1	12/29/2015 15:58
Toluene	U		0.012	0.036	mg/Kg-dry	1	12/29/2015 15:58
Xylenes, Total	U		0.028	0.11	mg/Kg-dry	1	12/29/2015 15:58
Surr: 1,2-Dichloroethane-d4	93.0			70-130	%REC	1	12/29/2015 15:58
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	12/29/2015 15:58
Surr: Dibromofluoromethane	92.3			70-130	%REC	1	12/29/2015 15:58
Surr: Toluene-d8	87.0			70-130	%REC	1	12/29/2015 15:58
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JB
Electrical Conductivity @ Saturation	25		0.0055	0.050	mmhos/cm @25°	10	12/30/2015 11:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	16		0.31	0.61	mg/Kg-dry	1	12/31/2015 16:45
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 12/30/15		Analyst: MB
Chromium, Hexavalent	U		0.34	1.2	mg/Kg-dry	1	12/31/2015 15:00
MOISTURE			Method: E160.3M				Analyst: ED
Moisture	18		0.025	0.050	% of sample	1	12/23/2015 18:05
PH			Method: SW9045D		Prep: EXTRACT / 12/23/15		Analyst: JB
pH	8.8		0		s.u.	1	12/23/2015 16:15

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBW01) 24-24.5
Collection Date: 12/18/2015 09:05 AM

Work Order: 15121353
Lab ID: 15121353-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 12/28/15		Analyst: IT
DRO (C10-C28)	10		1.6	4.9	mg/Kg-dry	1	12/29/2015 16:32
Surr: 4-Terphenyl-d14	61.4			39-133	%REC	1	12/29/2015 16:32
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 12/23/15		Analyst: IT
GRO (C6-C10)	U		1.4	3.0	mg/Kg-dry	1	12/23/2015 19:42
Surr: Toluene-d8	99.4			50-150	%REC	1	12/23/2015 19:42
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 12/29/15		Analyst: RG
Mercury	0.026		0.0016	0.019	mg/Kg-dry	1	12/29/2015 17:17
METALS ANALYSIS BY ICP							
			Method: SW846 6010C		Prep: SW3050B / 12/28/15		Analyst: JEC
Arsenic	13		0.11	0.45	mg/Kg-dry	1	12/28/2015 12:38
Barium	270		0.21	0.45	mg/Kg-dry	1	12/28/2015 12:38
Cadmium	0.27	J	0.070	0.90	mg/Kg-dry	1	12/28/2015 12:38
Chromium	15		0.014	0.45	mg/Kg-dry	1	12/28/2015 12:38
Copper	18		0.048	0.90	mg/Kg-dry	1	12/28/2015 12:38
Lead	13		0.054	0.45	mg/Kg-dry	1	12/28/2015 12:38
Nickel	14		0.14	0.45	mg/Kg-dry	1	12/28/2015 12:38
Selenium	0.89	J	0.27	0.90	mg/Kg-dry	1	12/28/2015 12:38
Silver	U		0.045	0.45	mg/Kg-dry	1	12/28/2015 12:38
Zinc	56		0.14	0.90	mg/Kg-dry	1	12/28/2015 12:38
SOLUBLE CATIONS FOR SAR							
			Method: SW846 6010C		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Calcium	160		0.22	5.0	mg/L	10	12/30/2015 17:01
Magnesium	140		0.22	2.0	mg/L	10	12/30/2015 17:01
Sodium	2,500		0.24	2.0	mg/L	10	12/30/2015 17:01
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Sodium Adsorption Ratio	34		0.010	0.010	none	1	12/30/2015
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3541 / 12/28/15		Analyst: RS
Acenaphthene	0.016		0.0029	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Anthracene	0.010		0.0038	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Benzo(a)anthracene	0.026		0.0047	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Benzo(a)pyrene	0.015		0.0017	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Benzo(b)fluoranthene	U		0.0027	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Benzo(k)fluoranthene	U		0.0049	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Chrysene	0.0098		0.0066	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Dibenzo(a,h)anthracene	U		0.0025	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Fluoranthene	0.018		0.0048	0.0078	mg/Kg-dry	1	12/29/2015 19:50

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBW01) 24-24.5
Collection Date: 12/18/2015 09:05 AM

Work Order: 15121353
Lab ID: 15121353-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.0078	J	0.0043	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Indeno(1,2,3-cd)pyrene	U		0.0049	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Naphthalene	0.016		0.0020	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Pyrene	0.029		0.0059	0.0078	mg/Kg-dry	1	12/29/2015 19:50
Surr: 2-Fluorobiphenyl	61.7			12-100	%REC	1	12/29/2015 19:50
Surr: 4-Terphenyl-d14	84.0			25-137	%REC	1	12/29/2015 19:50
Surr: Nitrobenzene-d5	63.2			37-107	%REC	1	12/29/2015 19:50
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 12/23/15		Analyst: BG
Benzene	U		0.0080	0.036	mg/Kg-dry	1	12/29/2015 16:23
Ethylbenzene	U		0.0083	0.036	mg/Kg-dry	1	12/29/2015 16:23
m,p-Xylene	U		0.016	0.071	mg/Kg-dry	1	12/29/2015 16:23
o-Xylene	U		0.012	0.036	mg/Kg-dry	1	12/29/2015 16:23
Toluene	U		0.012	0.036	mg/Kg-dry	1	12/29/2015 16:23
Xylenes, Total	U		0.027	0.11	mg/Kg-dry	1	12/29/2015 16:23
Surr: 1,2-Dichloroethane-d4	93.3			70-130	%REC	1	12/29/2015 16:23
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	12/29/2015 16:23
Surr: Dibromofluoromethane	96.7			70-130	%REC	1	12/29/2015 16:23
Surr: Toluene-d8	87.4			70-130	%REC	1	12/29/2015 16:23
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JB
Electrical Conductivity @ Saturation	17		0.0055	0.050	mmhos/cm @25°	10	12/30/2015 11:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	15		0.30	0.59	mg/Kg-dry	1	12/31/2015 16:45
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 12/30/15		Analyst: MB
Chromium, Hexavalent	U		0.33	1.1	mg/Kg-dry	1	12/31/2015 15:00
MOISTURE			Method: E160.3M				Analyst: ED
Moisture	16		0.025	0.050	% of sample	1	12/23/2015 18:05
PH			Method: SW9045D		Prep: EXTRACT / 12/23/15		Analyst: JB
pH	8.8		0		s.u.	1	12/23/2015 16:15

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBE02) 20-21
Collection Date: 12/18/2015 11:30 AM

Work Order: 15121353
Lab ID: 15121353-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 12/28/15		Analyst: IT
DRO (C10-C28)	9.5		1.6	4.8	mg/Kg-dry	1	12/29/2015 17:02
Surr: 4-Terphenyl-d14	64.6			39-133	%REC	1	12/29/2015 17:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 12/23/15		Analyst: IT
GRO (C6-C10)	U		1.4	2.9	mg/Kg-dry	1	12/23/2015 20:07
Surr: Toluene-d8	97.4			50-150	%REC	1	12/23/2015 20:07
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 12/29/15		Analyst: RG
Mercury	0.023		0.0015	0.018	mg/Kg-dry	1	12/29/2015 17:19
METALS ANALYSIS BY ICP							
			Method: SW846 6010C		Prep: SW3050B / 12/28/15		Analyst: JEC
Arsenic	13		0.11	0.46	mg/Kg-dry	1	12/28/2015 12:44
Barium	270		0.21	0.46	mg/Kg-dry	1	12/28/2015 12:44
Cadmium	0.18	J	0.071	0.91	mg/Kg-dry	1	12/28/2015 12:44
Chromium	22		0.015	0.46	mg/Kg-dry	1	12/28/2015 12:44
Copper	20		0.049	0.91	mg/Kg-dry	1	12/28/2015 12:44
Lead	12		0.055	0.46	mg/Kg-dry	1	12/28/2015 12:44
Nickel	25		0.14	0.46	mg/Kg-dry	1	12/28/2015 12:44
Selenium	0.75	J	0.27	0.91	mg/Kg-dry	1	12/29/2015 17:18
Silver	U		0.046	0.46	mg/Kg-dry	1	12/28/2015 12:44
Zinc	59		0.15	0.91	mg/Kg-dry	1	12/28/2015 12:44
SOLUBLE CATIONS FOR SAR							
			Method: SW846 6010C		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Calcium	48		0.22	5.0	mg/L	10	12/30/2015 17:07
Magnesium	43		0.22	2.0	mg/L	10	12/30/2015 17:07
Sodium	130		0.24	2.0	mg/L	10	12/30/2015 17:07
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Sodium Adsorption Ratio	3.4		0.010	0.010	none	1	12/30/2015
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3541 / 12/28/15		Analyst: RS
Acenaphthene	0.0080		0.0029	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Anthracene	0.0065	J	0.0037	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Benzo(a)anthracene	0.022		0.0046	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Benzo(a)pyrene	0.012		0.0016	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Benzo(b)fluoranthene	U		0.0026	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Benzo(k)fluoranthene	U		0.0048	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Chrysene	0.0076	J	0.0064	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Dibenzo(a,h)anthracene	U		0.0025	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Fluoranthene	0.012		0.0047	0.0076	mg/Kg-dry	1	12/29/2015 19:30

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBE02) 20-21
Collection Date: 12/18/2015 11:30 AM

Work Order: 15121353
Lab ID: 15121353-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0042	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Indeno(1,2,3-cd)pyrene	U		0.0047	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Naphthalene	0.011		0.0020	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Pyrene	0.020		0.0058	0.0076	mg/Kg-dry	1	12/29/2015 19:30
Surr: 2-Fluorobiphenyl	55.9			12-100	%REC	1	12/29/2015 19:30
Surr: 4-Terphenyl-d14	94.2			25-137	%REC	1	12/29/2015 19:30
Surr: Nitrobenzene-d5	53.8			37-107	%REC	1	12/29/2015 19:30
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 12/23/15		Analyst: BG
Benzene	U		0.0078	0.034	mg/Kg-dry	1	12/29/2015 16:47
Ethylbenzene	U		0.0080	0.034	mg/Kg-dry	1	12/29/2015 16:47
m,p-Xylene	U		0.015	0.069	mg/Kg-dry	1	12/29/2015 16:47
o-Xylene	U		0.011	0.034	mg/Kg-dry	1	12/29/2015 16:47
Toluene	U		0.011	0.034	mg/Kg-dry	1	12/29/2015 16:47
Xylenes, Total	U		0.027	0.10	mg/Kg-dry	1	12/29/2015 16:47
Surr: 1,2-Dichloroethane-d4	95.4			70-130	%REC	1	12/29/2015 16:47
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	12/29/2015 16:47
Surr: Dibromofluoromethane	94.3			70-130	%REC	1	12/29/2015 16:47
Surr: Toluene-d8	87.1			70-130	%REC	1	12/29/2015 16:47
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JB
Electrical Conductivity @ Saturation	1.5		0.0055	0.050	mmhos/cm @25°	10	12/30/2015 11:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	22		0.29	0.57	mg/Kg-dry	1	12/31/2015 16:45
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 12/30/15		Analyst: MB
Chromium, Hexavalent	U		0.31	1.1	mg/Kg-dry	1	12/31/2015 15:00
MOISTURE			Method: E160.3M				Analyst: ED
Moisture	13		0.025	0.050	% of sample	1	12/23/2015 18:05
PH			Method: SW9045D		Prep: EXTRACT / 12/23/15		Analyst: JB
pH	8.9		0		s.u.	1	12/23/2015 16:15

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBE02) 34-36
Collection Date: 12/18/2015 12:50 PM

Work Order: 15121353
Lab ID: 15121353-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3541 / 12/28/15		Analyst: IT
DRO (C10-C28)	4.5	J	1.6	4.9	mg/Kg-dry	1	12/29/2015 17:32
Surr: 4-Terphenyl-d14	60.9			39-133	%REC	1	12/29/2015 17:32
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 12/23/15		Analyst: IT
GRO (C6-C10)	U		1.4	3.0	mg/Kg-dry	1	12/23/2015 20:32
Surr: Toluene-d8	99.9			50-150	%REC	1	12/23/2015 20:32
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 12/29/15		Analyst: LR
Mercury	0.033		0.0014	0.016	mg/Kg-dry	1	1/3/2016 22:42
METALS ANALYSIS BY ICP							
			Method: SW846 6010C		Prep: SW3050B / 12/28/15		Analyst: JEC
Arsenic	16		0.11	0.46	mg/Kg-dry	1	12/28/2015 13:36
Barium	220		0.22	0.46	mg/Kg-dry	1	12/28/2015 13:36
Cadmium	0.17	J	0.072	0.93	mg/Kg-dry	1	12/28/2015 13:36
Chromium	21		0.015	0.46	mg/Kg-dry	1	12/28/2015 13:36
Copper	20		0.050	0.93	mg/Kg-dry	1	12/28/2015 13:36
Lead	11		0.056	0.46	mg/Kg-dry	1	12/28/2015 13:36
Nickel	23		0.14	0.46	mg/Kg-dry	1	12/28/2015 13:36
Selenium	0.70	J	0.28	0.93	mg/Kg-dry	1	12/28/2015 13:36
Silver	U		0.046	0.46	mg/Kg-dry	1	12/28/2015 13:36
Zinc	66		0.15	0.93	mg/Kg-dry	1	12/28/2015 13:36
SOLUBLE CATIONS FOR SAR							
			Method: SW846 6010C		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Calcium	36		0.22	5.0	mg/L	10	12/30/2015 17:13
Magnesium	29		0.22	2.0	mg/L	10	12/30/2015 17:13
Sodium	45		0.24	2.0	mg/L	10	12/30/2015 17:13
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JEC
Sodium Adsorption Ratio	1.4		0.010	0.010	none	1	12/30/2015
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3541 / 12/28/15		Analyst: RS
Acenaphthene	0.0090		0.0029	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Anthracene	0.0059	J	0.0038	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Benzo(a)anthracene	0.022		0.0048	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Benzo(a)pyrene	0.011		0.0017	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Benzo(b)fluoranthene	U		0.0027	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Benzo(k)fluoranthene	U		0.0049	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Chrysene	U		0.0066	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Dibenzo(a,h)anthracene	U		0.0026	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Fluoranthene	0.011		0.0048	0.0078	mg/Kg-dry	1	12/29/2015 19:11

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

ALS Group USA, Corp

Date: 04-Jan-16

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
Sample ID: 20151218-ON11 (SBE02) 34-36
Collection Date: 12/18/2015 12:50 PM

Work Order: 15121353
Lab ID: 15121353-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0044	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Indeno(1,2,3-cd)pyrene	0.0082		0.0049	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Naphthalene	0.0094		0.0020	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Pyrene	0.020		0.0059	0.0078	mg/Kg-dry	1	12/29/2015 19:11
Surr: 2-Fluorobiphenyl	67.9			12-100	%REC	1	12/29/2015 19:11
Surr: 4-Terphenyl-d14	94.7			25-137	%REC	1	12/29/2015 19:11
Surr: Nitrobenzene-d5	74.7			37-107	%REC	1	12/29/2015 19:11
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 12/23/15		Analyst: BG
Benzene	U		0.0081	0.036	mg/Kg-dry	1	12/29/2015 17:12
Ethylbenzene	U		0.0084	0.036	mg/Kg-dry	1	12/29/2015 17:12
m,p-Xylene	U		0.016	0.072	mg/Kg-dry	1	12/29/2015 17:12
o-Xylene	U		0.012	0.036	mg/Kg-dry	1	12/29/2015 17:12
Toluene	U		0.012	0.036	mg/Kg-dry	1	12/29/2015 17:12
Xylenes, Total	U		0.028	0.11	mg/Kg-dry	1	12/29/2015 17:12
Surr: 1,2-Dichloroethane-d4	92.6			70-130	%REC	1	12/29/2015 17:12
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	12/29/2015 17:12
Surr: Dibromofluoromethane	96.0			70-130	%REC	1	12/29/2015 17:12
Surr: Toluene-d8	85.9			70-130	%REC	1	12/29/2015 17:12
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 12/30/15		Analyst: JB
Electrical Conductivity @ Saturation	0.74		0.0055	0.050	mmhos/cm @25°	10	12/30/2015 11:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	21		0.30	0.60	mg/Kg-dry	1	12/31/2015 16:45
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 12/30/15		Analyst: MB
Chromium, Hexavalent	U		0.34	1.2	mg/Kg-dry	1	12/31/2015 15:00
MOISTURE			Method: E160.3M				Analyst: ED
Moisture	16		0.025	0.050	% of sample	1	12/23/2015 18:05
PH			Method: SW9045D		Prep: EXTRACT / 12/23/15		Analyst: JB
pH	8.6		0		s.u.	1	12/23/2015 16:15

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

Client: Encana Oil and Gas (USA) Inc.
Project: ON 11 Site Assessment
WorkOrder: 15121353

**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
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

Client: Encana Oil and Gas (USA) Inc.

QC BATCH REPORT

Work Order: 15121353

Project: ON 11 Site Assessment

Batch ID: 80706

Instrument ID GC8

Method: SW8015M

MBLK		Sample ID: DBLKS1-80706-80706				Units: mg/Kg		Analysis Date: 12/29/2015 10:00 A		
Client ID:		Run ID: GC8_151229A				SeqNo: 3639703		Prep Date: 12/28/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

U 5.0

Surr: 4-Terphenyl-d14

1.341 0 2 0 67.1 39-133 0

LCS		Sample ID: DLCSS1-80706-80706				Units: mg/Kg		Analysis Date: 12/29/2015 10:30 A		
Client ID:		Run ID: GC8_151229A				SeqNo: 3639705		Prep Date: 12/28/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

151.3 5.0 200 0 75.6 61-109 0

Surr: 4-Terphenyl-d14

1.286 0 2 0 64.3 39-133 0

MS		Sample ID: 15121353-01A MS				Units: mg/Kg		Analysis Date: 12/29/2015 11:00 A		
Client ID: 20151218-ON11 (SBW01) 19-20		Run ID: GC8_151229A				SeqNo: 3639707		Prep Date: 12/28/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

137.5 4.1 165.6 6.473 79.2 48-110 0

Surr: 4-Terphenyl-d14

1.058 0 1.656 0 63.9 39-133 0

MSD		Sample ID: 15121353-01A MSD				Units: mg/Kg		Analysis Date: 12/29/2015 11:31 A		
Client ID: 20151218-ON11 (SBW01) 19-20		Run ID: GC8_151229A				SeqNo: 3639710		Prep Date: 12/28/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

129.8 4.1 165 6.473 74.7 48-110 137.5 5.79 30

Surr: 4-Terphenyl-d14

1.012 0 1.65 0 61.3 39-133 1.058 4.44 30

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80651** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-80651-80651				Units: µg/Kg		Analysis Date: 12/23/2015 12:57 PM		
Client ID:		Run ID: GC9_151223A				SeqNo: 3635298		Prep Date: 12/23/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
Surr: Toluene-d8	4874	0	5000	0	97.5	50-150	0			

LCS		Sample ID: LCS-80651-80651				Units: µg/Kg		Analysis Date: 12/23/2015 12:32 PM		
Client ID:		Run ID: GC9_151223A				SeqNo: 3635297		Prep Date: 12/23/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	483100	2,500	500000	0	96.6	70-130	0			
Surr: Toluene-d8	4578	0	5000	0	91.6	50-150	0			

MS		Sample ID: 15121348-01A MS				Units: µg/Kg		Analysis Date: 12/23/2015 04:18 PM		
Client ID:		Run ID: GC9_151223A				SeqNo: 3637033		Prep Date: 12/23/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	452400	2,500	500000	0	90.5	70-130	0			
Surr: Toluene-d8	4694	0	5000	0	93.9	50-150	0			

MSD		Sample ID: 15121348-01A MSD				Units: µg/Kg		Analysis Date: 12/23/2015 04:43 PM		
Client ID:		Run ID: GC9_151223A				SeqNo: 3637034		Prep Date: 12/23/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	448400	2,500	500000	0	89.7	70-130	452400	0.889	30	
Surr: Toluene-d8	4694	0	5000	0	93.9	50-150	4694	0.0107	30	

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80742** Instrument ID **HG1** Method: **SW7471B**

MBLK				Sample ID: MBLK-80742-80742				Units: mg/Kg			Analysis Date: 12/29/2015 03:56 PM				
Client ID:				Run ID: HG1_151229A				SeqNo: 3640787			Prep Date: 12/29/2015			DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury U 0.020

LCS				Sample ID: LCS-80742-80742				Units: mg/Kg				Analysis Date: 12/30/2015 01:11 PM					
Client ID:				Run ID: HG1_151230A				SeqNo: 3641947				Prep Date: 12/29/2015				DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual						

Mercury 0.165 0.020 0.1665 0 99.1 80-120 0

MS				Sample ID: 15121399-01BMS				Units: mg/Kg			Analysis Date: 12/29/2015 04:29 PM			
Client ID:				Run ID: HG1_151229A				SeqNo: 3640801			Prep Date: 12/29/2015		DF: 1	
Analyte				Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1387 0.014 0.1205 0.01246 105 75-125 0

MSD				Sample ID: 15121399-01BMSD				Units: mg/Kg			Analysis Date: 12/29/2015 04:31 PM			
Client ID:				Run ID: HG1_151229A				SeqNo: 3640802			Prep Date: 12/29/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Mercury 0.1327 0.014 0.1143 0.01246 105 75-125 0.1387 4.42 35

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
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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: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80775** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-80775-80775					Units: mg/Kg		Analysis Date: 1/3/2016 10:37 PM		
Client ID:			Run ID: HG1_160103A			SeqNo: 3644849		Prep Date: 12/29/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury U 0.020

LCS		Sample ID: LCS-80775-80775					Units: mg/Kg		Analysis Date: 1/3/2016 10:39 PM	
Client ID:			Run ID: HG1_160103A			SeqNo: 3644851		Prep Date: 12/29/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1517 0.020 0.1665 0 91.1 80-120 0

MS		Sample ID: 15121413-03BMS					Units: mg/Kg		Analysis Date: 1/3/2016 11:26 PM		
Client ID:			Run ID: HG1_160103A			SeqNo: 3644877		Prep Date: 12/29/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1286 0.016 0.1304 0.0134 88.3 75-125 0

MSD		Sample ID: 15121413-03BMSD				Units: mg/Kg		Analysis Date: 1/3/2016 11:28 PM		
Client ID:		Run ID: HG1_160103A			SeqNo: 3644878		Prep Date: 12/29/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1273 0.016 0.1297 0.0134 87.8 75-125 0.1286 1.03 35

The following samples were analyzed in this batch:

15121353-04A

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80713**

Instrument ID **ICP2**

Method: **SW846 6010C**

MBLK				Sample ID: MBLK-80713-80713				Units: mg/Kg		Analysis Date: 12/28/2015 12:16 PM		
Client ID:			Run ID: ICP2_151228A				SeqNo: 3637604		Prep Date: 12/28/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Arsenic	U	0.25										
Barium	U	0.25										
Cadmium	U	0.50										
Chromium	U	0.25										
Copper	U	0.50										
Lead	U	0.25										
Nickel	U	0.25										
Selenium	U	0.50										
Silver	U	0.25										
Zinc	U	0.50										

LCS					Sample ID: LCS-80713-80713			Units: mg/Kg		Analysis Date: 12/28/2015 12:22 PM	
Client ID:			Run ID: ICP2_151228A			SeqNo: 3637605		Prep Date: 12/28/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	5.109	0.25	5	0	102	80-120	0				
Barium	4.878	0.25	5	0	97.6	80-120	0				
Cadmium	4.459	0.50	5	0	89.2	80-120	0				
Chromium	5.138	0.25	5	0	103	80-120	0				
Copper	4.678	0.50	5	0	93.6	80-120	0				
Lead	4.851	0.25	5	0	97	80-120	0				
Nickel	4.591	0.25	5	0	91.8	80-120	0				
Selenium	5.032	0.50	5	0	101	80-120	0				
Silver	4.614	0.25	5	0	92.3	80-120	0				
Zinc	5.062	0.50	5	0	101	80-120	0				

MS					Sample ID: 15121353-03AMS		Units: mg/Kg		Analysis Date: 12/28/2015 12:50 PM		
Client ID: 20151218-ON11 (SBE02) 20-21			Run ID: ICP2_151228A		SeqNo: 3637610		Prep Date: 12/28/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	18.35	0.40	7.974	11.65	84	75-125	0				
Barium	251.2	0.40	7.974	235.6	195	75-125	0			SO	
Cadmium	7.536	0.80	7.974	0.1554	92.5	75-125	0				
Chromium	27.81	0.40	7.974	18.98	111	75-125	0				
Copper	22.4	0.80	7.974	17.2	65.2	75-125	0			S	
Lead	16.71	0.40	7.974	10.79	74.3	75-125	0			S	
Nickel	24.83	0.40	7.974	21.53	41.4	75-125	0			S	
Selenium	9.177	0.80	7.974	1.006	102	75-125	0				
Silver	7.924	0.40	7.974	-0.05216	100	75-125	0				
Zinc	58.76	0.80	7.974	51.65	89.1	75-125	0			O	

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80713** Instrument ID **ICP2** Method: **SW846 6010C**

MSD				Sample ID: 15121353-03AMSD			Units: mg/Kg		Analysis Date: 12/28/2015 12:56 PM	
Client ID: 20151218-ON11 (SBE02) 20-21				Run ID: ICP2_151228A			SeqNo: 3637611		Prep Date: 12/28/2015	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	18.88	0.40	8.039	11.65	90	75-125	18.35	2.89	20	
Barium	237.9	0.40	8.039	235.6	27.6	75-125	251.2	5.44	20	SO
Cadmium	7.519	0.80	8.039	0.1554	91.6	75-125	7.536	0.219	20	
Chromium	26.82	0.40	8.039	18.98	97.5	75-125	27.81	3.61	20	
Copper	23.01	0.80	8.039	17.2	72.2	75-125	22.4	2.67	20	S
Lead	17.04	0.40	8.039	10.79	77.8	75-125	16.71	1.97	20	
Nickel	26.59	0.40	8.039	21.53	62.9	75-125	24.83	6.84	20	S
Selenium	9.451	0.80	8.039	1.006	105	75-125	9.177	2.95	20	
Silver	7.858	0.40	8.039	-0.05216	98.4	75-125	7.924	0.832	20	
Zinc	60.82	0.80	8.039	51.65	114	75-125	58.76	3.45	20	O

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80768** Instrument ID **ICP2** Method: **SW846 6010C**

DUP		Sample ID: 15121353-04ADUP				Units: mg/L		Analysis Date: 12/30/2015 05:18 PM		
Client ID: 20151218-ON11 (SBE02) 34-36		Run ID: ICP2_151230A				SeqNo: 3642564		Prep Date: 12/30/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	30.01	5.0	0	0	0	0-0	36.19	18.7		
Magnesium	23.54	2.0	0	0	0	0-0	29.32	21.9		
Sodium	41.44	2.0	0	0	0	0-0	45.24	8.78		

DUP		Sample ID: 15121353-04ADUP				Units: none		Analysis Date: 12/30/2015		
Client ID: 20151218-ON11 (SBE02) 34-36		Run ID: SAR_151230A				SeqNo: 3643220		Prep Date: 12/30/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	1.375	0.010	0	0	0		1.355	1.49	50	

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-80705-80705				Units: µg/Kg		Analysis Date: 12/28/2015 05:41 PM		
Client ID:		Run ID: SVMS8_151228A				SeqNo: 3640104		Prep Date: 12/28/2015		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	1359	0	1667	0	81.5	12-100	0			
Surr: 4-Terphenyl-d14	2007	0	1667	0	120	25-137	0			
Surr: Nitrobenzene-d5	1619	0	1667	0	97.1	37-107	0			

LCS		Sample ID: SLCSS1-80705-80705				Units: µg/Kg		Analysis Date: 12/28/2015 05:20 PM		
Client ID:		Run ID: SVMS8_151228A				SeqNo: 3640103		Prep Date: 12/28/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	486	6.7	666.7	0	72.9	45-110	0			
Anthracene	605.7	6.7	666.7	0	90.8	55-105	0			
Benzo(a)anthracene	628.3	6.7	666.7	0	94.2	50-110	0			
Benzo(a)pyrene	660	6.7	666.7	0	99	50-110	0			
Benzo(b)fluoranthene	681.3	6.7	666.7	0	102	45-115	0			
Benzo(k)fluoranthene	703.3	6.7	666.7	0	105	45-115	0			
Chrysene	673.3	6.7	666.7	0	101	55-110	0			
Dibenzo(a,h)anthracene	678.3	6.7	666.7	0	102	40-125	0			
Fluoranthene	618.3	6.7	666.7	0	92.7	55-115	0			
Fluorene	488.7	6.7	666.7	0	73.3	50-110	0			
Indeno(1,2,3-cd)pyrene	680.7	6.7	666.7	0	102	40-120	0			
Naphthalene	568.3	6.7	666.7	0	85.2	40-105	0			
Pyrene	758.7	6.7	666.7	0	114	45-125	0			
Surr: 2-Fluorobiphenyl	1357	0	1667	0	81.4	12-100	0			
Surr: 4-Terphenyl-d14	2028	0	1667	0	122	25-137	0			
Surr: Nitrobenzene-d5	1543	0	1667	0	92.6	37-107	0			

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MS				Sample ID: 15121249-03B MS			Units: µg/Kg		Analysis Date: 12/28/2015 07:30 PM		
Client ID:			Run ID: SVMS8_151228A			SeqNo: 3640108		Prep Date: 12/28/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	410.1	6.7	665.2	13.05	59.7	45-110	0				
Anthracene	593.3	6.7	665.2	53.84	81.1	55-105	0				
Benzo(a)anthracene	798.5	6.7	665.2	261	80.8	50-110	0				
Benzo(a)pyrene	846.8	6.7	665.2	259.4	88.3	50-110	0				
Benzo(b)fluoranthene	924.3	6.7	665.2	393.2	79.8	45-115	0				
Benzo(k)fluoranthene	740	6.7	665.2	137.4	90.6	45-115	0				
Chrysene	857.8	6.7	665.2	269.2	88.5	55-110	0				
Dibenzo(a,h)anthracene	657.5	6.7	665.2	46.34	91.9	40-125	0				
Fluoranthene	963.5	6.7	665.2	444.1	78.1	55-115	0				
Fluorene	467	6.7	665.2	21.21	67	50-110	0				
Indeno(1,2,3-cd)pyrene	844.8	6.7	665.2	196.8	97.4	40-120	0				
Naphthalene	516.2	6.7	665.2	22.84	74.2	40-105	0				
Pyrene	1088	6.7	665.2	394.5	104	45-125	0				
Surr: 2-Fluorobiphenyl	1183	0	1663	0	71.2	12-100	0				
Surr: 4-Terphenyl-d14	1647	0	1663	0	99	25-137	0				
Surr: Nitrobenzene-d5	1359	0	1663	0	81.7	37-107	0				

MSD				Sample ID: 15121249-03B MSD		Units: µg/Kg		Analysis Date: 12/28/2015 07:50 PM		
Client ID:			Run ID: SVMS8_151228A			SeqNo: 3640109		Prep Date: 12/28/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	402.2	6.6	664.3	13.05	58.6	45-110	410.1	1.94	30	
Anthracene	550	6.6	664.3	53.84	74.7	55-105	593.3	7.58	30	
Benzo(a)anthracene	738.6	6.6	664.3	261	71.9	50-110	798.5	7.8	30	
Benzo(a)pyrene	744.9	6.6	664.3	259.4	73.1	50-110	846.8	12.8	30	
Benzo(b)fluoranthene	803.7	6.6	664.3	393.2	61.8	45-115	924.3	14	30	
Benzo(k)fluoranthene	675.9	6.6	664.3	137.4	81.1	45-115	740	9.06	30	
Chrysene	779.1	6.6	664.3	269.2	76.8	55-110	857.8	9.6	30	
Dibenzo(a,h)anthracene	604.5	6.6	664.3	46.34	84	40-125	657.5	8.41	30	
Fluoranthene	886.1	6.6	664.3	444.1	66.5	55-115	963.5	8.37	30	
Fluorene	449	6.6	664.3	21.21	64.4	50-110	467	3.92	30	
Indeno(1,2,3-cd)pyrene	747.3	6.6	664.3	196.8	82.9	40-120	844.8	12.3	30	
Naphthalene	497.2	6.6	664.3	22.84	71.4	40-105	516.2	3.75	30	
Pyrene	974.1	6.6	664.3	394.5	87.3	45-125	1088	11	30	
Surr: 2-Fluorobiphenyl	1134	0	1661	0	68.3	12-100	1183	4.24	40	
Surr: 4-Terphenyl-d14	1550	0	1661	0	93.3	25-137	1647	6.09	40	
Surr: Nitrobenzene-d5	1381	0	1661	0	83.2	37-107	1359	1.65	40	

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MBLK Sample ID: MBLK-80647-80647				Units: µg/Kg			Analysis Date: 12/23/2015 02:20 PM			
Client ID:		Run ID: VMS8_151223A		SeqNo: 3635664		Prep Date: 12/23/2015		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	949.5	0	1000	0	95	70-130	0			
Surr: 4-Bromofluorobenzene	1013	0	1000	0	101	70-130	0			
Surr: Dibromofluoromethane	953.5	0	1000	0	95.4	70-130	0			
Surr: Toluene-d8	918.5	0	1000	0	91.8	70-130	0			

LCS Sample ID: LCS-80647-80647				Units: µg/Kg			Analysis Date: 12/23/2015 12:41 PM			
Client ID:		Run ID: VMS8_151223A		SeqNo: 3635663		Prep Date: 12/23/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1050	30	1000	0	105	75-125	0			
Ethylbenzene	965.5	30	1000	0	96.6	75-125	0			
m,p-Xylene	1999	60	2000	0	100	80-125	0			
o-Xylene	962.5	30	1000	0	96.2	75-125	0			
Toluene	958	30	1000	0	95.8	70-125	0			
Xylenes, Total	2962	90	3000	0	98.7	75-125	0			
Surr: 1,2-Dichloroethane-d4	905.5	0	1000	0	90.6	70-130	0			
Surr: 4-Bromofluorobenzene	1075	0	1000	0	108	70-130	0			
Surr: Dibromofluoromethane	955	0	1000	0	95.5	70-130	0			
Surr: Toluene-d8	934.5	0	1000	0	93.4	70-130	0			

MS Sample ID: 15121217-12A MS				Units: µg/Kg			Analysis Date: 12/23/2015 08:09 PM			
Client ID:		Run ID: VMS8_151223A		SeqNo: 3636846		Prep Date: 12/23/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1030	30	1000	0	103	75-125	0			
Ethylbenzene	888	30	1000	0	88.8	75-125	0			
m,p-Xylene	1848	60	2000	0	92.4	80-125	0			
o-Xylene	907.5	30	1000	0	90.8	75-125	0			
Toluene	896.5	30	1000	0	89.6	70-125	0			
Xylenes, Total	2755	90	3000	0	91.8	75-125	0			
Surr: 1,2-Dichloroethane-d4	971	0	1000	0	97.1	70-130	0			
Surr: 4-Bromofluorobenzene	1038	0	1000	0	104	70-130	0			
Surr: Dibromofluoromethane	947	0	1000	0	94.7	70-130	0			
Surr: Toluene-d8	930.5	0	1000	0	93	70-130	0			

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MSD					Sample ID: 15121217-12A MSD			Units: µg/Kg		Analysis Date: 12/23/2015 08:33 PM	
Client ID:			Run ID: VMS8_151223A			SeqNo: 3636848		Prep Date: 12/23/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1036	30	1000	0	104	75-125	1030	0.629	30		
Ethylbenzene	907	30	1000	0	90.7	75-125	888	2.12	30		
m,p-Xylene	1936	60	2000	0	96.8	80-125	1848	4.68	30		
o-Xylene	939	30	1000	0	93.9	75-125	907.5	3.41	30		
Toluene	935.5	30	1000	0	93.6	70-125	896.5	4.26	30		
Xylenes, Total	2875	90	3000	0	95.8	75-125	2755	4.26	30		
Surr: 1,2-Dichloroethane-d4	925	0	1000	0	92.5	70-130	971	4.85	30		
Surr: 4-Bromofluorobenzene	1062	0	1000	0	106	70-130	1038	2.28	30		
Surr: Dibromofluoromethane	944	0	1000	0	94.4	70-130	947	0.317	30		
Surr: Toluene-d8	912.5	0	1000	0	91.2	70-130	930.5	1.95	30		

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80680** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-80680-80680				Units: s.u.		Analysis Date: 12/23/2015 04:15 PM		
Client ID:		Run ID: WETCHEM_151223L			SeqNo: 3635618		Prep Date: 12/23/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	4.01	0	4	0	100	90-110	0			

DUP		Sample ID: 15121353-01A DUP				Units: s.u.		Analysis Date: 12/23/2015 04:15 PM		
Client ID: 20151218-ON11 (SBW01) 19-20		Run ID: WETCHEM_151223L				SeqNo: 3635620		Prep Date: 12/23/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.75	0	0	0	0	0-0	8.76	0.114	20	

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80768** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 15121353-04A DUP				Units: mmhos/cm @25°		Analysis Date: 12/30/2015 11:30 A		
Client ID: 20151218-ON11 (SBE02) 34-36			Run ID: WETCHEM_151230B			SeqNo: 3641757		Prep Date: 12/30/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.62	0.050	0	0	0		0.743	18	50	

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **80900** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-80900-80900				Units: mg/Kg		Analysis Date: 12/31/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_151231I		SeqNo: 3644473		Prep Date: 12/30/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-80900-80900				Units: mg/Kg		Analysis Date: 12/31/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_151231I		SeqNo: 3644472		Prep Date: 12/30/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.69 1.0 5 0 93.8 80-120 0

MS		Sample ID: 15121353-03A MS				Units: mg/Kg		Analysis Date: 12/31/2015 03:00 PM		
Client ID: 20151218-ON11 (SBE02) 20-21		Run ID: WETCHEM_151231I		SeqNo: 3644465		Prep Date: 12/30/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.437 0.97 4.854 0.1604 88.1 75-125 0

MS		Sample ID: 15121353-03A MSI				Units: mg/Kg		Analysis Date: 12/31/2015 03:00 PM		
Client ID: 20151218-ON11 (SBE02) 20-21		Run ID: WETCHEM_151231I		SeqNo: 3644467		Prep Date: 12/30/2015		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2386 99 2565 0.1604 93 75-125 0

MSD		Sample ID: 15121353-03A MSD				Units: mg/Kg		Analysis Date: 12/31/2015 03:00 PM		
Client ID: 20151218-ON11 (SBE02) 20-21		Run ID: WETCHEM_151231I		SeqNo: 3644466		Prep Date: 12/30/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.194 0.97 4.854 0.1604 83.1 75-125 4.437 5.62 20

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15121353
Project: ON 11 Site Assessment

QC BATCH REPORT

Batch ID: **R178959** Instrument ID **MOIST** Method: **E160.3M**

MBLK				Sample ID: WBLKS-R178959				Units: % of sample			Analysis Date: 12/23/2015 06:05 PM			
Client ID:				Run ID: MOIST_151223D				SeqNo: 3636143			Prep Date:		DF: 1	
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: LCS-R178959				Units: % of sample		Analysis Date: 12/23/2015 06:05 PM		
Client ID:		Run ID: MOIST_151223D				SeqNo: 3636139		Prep Date:		DF: 1
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: 15121345-01B DUP				Units: % of sample			Analysis Date: 12/23/2015 06:05 PM			
Client ID:				Run ID: MOIST_151223D				SeqNo: 3636125			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Moisture	17.1	0.050	0	0	0		17.1	0	20					

DUP				Sample ID: 15121345-02B DUP				Units: % of sample			Analysis Date: 12/23/2015 06:05 PM			
Client ID:				Run ID: MOIST_151223D				SeqNo: 3636127			Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Moisture		24.65	0.050	0	0	0		22.64	8.5	20				

The following samples were analyzed in this batch:

15121353-01A	15121353-02A	15121353-03A
15121353-04A		

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



CHAIN OF CUSTODY

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

COC number (for client tracking)

Page 1 of 1

[illegible]

3.2.0

ORIGIN ID: RILA (616) 298-1033
NICK MARTINEZ
ALS ENVIRONMENTAL PARACHUTE
PARACHUTE SERVICE CENTER
127 EAST 1ST ST
PARACHUTE, CO 81635
UNITED STATES US

SHIP DATE: 22DEC15
ACTWGT: 50.00 LB
CAD: 22548400 NET3870
DIMS: 24x15x15 IN
BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL HOLLAND LAB
3352 128TH AVE

HOLLAND MI 49424

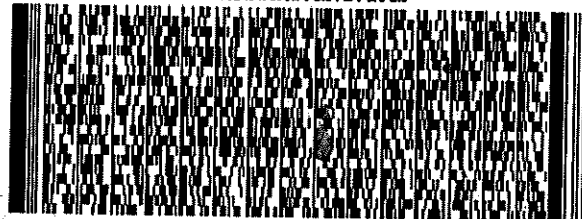
(616) 399-6070

REF: 122215-2

INV:

PO: PARACHUTE

DEPT:



FedEx
Express



REL#
3785346

TRK#

0201

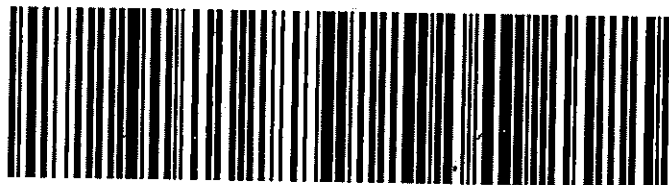
MASTER

XX HLMA

MI-US

49424
GRR

WED - 23 DEC 10:30A
PRIORITY OVERNIGHT



539J11308/3100

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. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees; costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits; see current FedEx Service Guide.

ALSIPARACHUTE Custody Seal

Time

Name

Sample Receipt Checklist

Client Name: ENCANA2

Date/Time Received: 23-Dec-15 10:30

Work Order: 15121353

Received by: DS

Checklist completed by Diane Shaw

23-Dec-15

Reviewed by: Les Arnold

23-Dec-15

eSignature

Date

eSignature

Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?

Yes ☒

No ☐

Not Present ☐

Custody seals intact on shipping container/cooler?

Yes ☒

No ☐

Not Present ☐

Custody seals intact on sample bottles?

Yes ☐

No ☐

Not Present ☒

Chain of custody present?

Yes ☒

No ☐

Chain of custody signed when relinquished and received?

Yes ☒

No ☐

Chain of custody agrees with sample labels?

Yes ☒

No ☐

Samples in proper container/bottle?

Yes ☒

No ☐

Sample containers intact?

Yes ☒

No ☐

Sufficient sample volume for indicated test?

Yes ☒

No ☐

All samples received within holding time?

Yes ☒

No ☐

Container/Temp Blank temperature in compliance?

Yes ☒

No ☐

Sample(s) received on ice?

Yes ☒

No ☐

Temperature(s)/Thermometer(s):

3.2/3.2 c

SR2

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage:

12/23/2015 10:58:15 AM

Water - VOA vials have zero headspace?

Yes ☐

No ☐

No VOA vials submitted ☒

Water - pH acceptable upon receipt?

Yes ☐

No ☐

N/A ☒

pH adjusted?

Yes ☐

No ☐

N/A ☒

pH adjusted by:

-

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

Location Map: ON11



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 820 Megan Ave Unit B
 Rifle, Colorado 81650

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring Name:	SBN01	Project:	ON11
Date:	12/16/15	Project Number:	033415026
Logged By:	Dustin Held	Drilled By:	Himes Drilling
Drilling Method:	Air Rotary	Sampling Method:	Split Spoon
	Hole Diameter:	Grout:	NA
	6"		

Elevation: 5980 Detector: PID

Depth to Liquid: NA Depth to Water: NA Total Depth: 20'

Penetration Resistance	Moisture Content	PID (ppm)	Time	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks
	moist	0.1 ppm	0930	0		Fill	0-2' - brown roadbase gravel / material w/ interbedded basalt clasts
	moist	0.2 ppm	1000	1		cc	2-4' - brown, silty clay w/ interbedded basalt clasts, organics (wood bark)
	moist	0.3 ppm	1100	2		cc	5-6' - brown, thick dense clay, claystone w/ interbedded basalt clasts, clay 50%, silt 35%, sand 15% - Rock @ 2'
	dry	0.15 ppm	1155	3		cc	10-11' - brown silty clay w/ interbedded mudstone layers, oxides, silt 45%, clay 30%, 25% sand - sand &
	dry	0.3 ppm	1345	4		cc	15-15.5' - brown silty clay w/ interbedded mudstone layers / shale, oxides
	dry	0.2 ppm	1420	5		cc	20-20.5' - same as above (soil damp) - Subst TD = 20' bgs

ON11



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SBE01		Project: ON11	
Date: 12/17/15		Project Number: Q33415026	
Logged By: Dustin Held		Drilled By: Hime Drilling	
Drilling Method: Air Rotary		Sampling Method: Split Spoon	
Seal: Bentonite Chips		Grout: NA	
Diameter: 2"	Length: 5'	Hole Diameter: 6"	Depth to Liquid: NA
Diameter: 2"	Length: 15'	Total Depth: 20'	Depth to Water: NA

Penetration Resistance	Staining?	Odor?	Moisture Content	PID (ppm)	Time	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
						0				
						2				
						4		CL	Try to collect soil sample @ 4-6' - boulder, boulder @ 6-8'	
						6				
	NO	YES	moist	149.9 ppm	0920	8		CH	8-8.5' brown thick clay w/ interbedded shale pieces - submit Petrolog = 149.7 ppm	
					0950	10			10-12' - no sample recovery rock @ 9.5 - 13'	
						12		CH		
						14				
				117 ppm	1010	16		CH	14-16' 14-14.75' - brown clay w/ interbedded shale pieces, clay 55%, silt 35%, 15% sand PID = 117 ppm	
	NO	NO	moist	8.9 ppm		18				
						20		CH	14.75-16' - brown thick clay, clay 70%, silt 20%, sand 10%	
					1045	22			PID = 8.9 ppm	
						24			- submit	
						26			20-22' - no recovery / refusal	
						28				
						30			TD = 20' bgs	
						32				
						34				
						36				
						38				
						40				
						42				

ON11

SBND1

AN

Wellhead

Separator
Shelter HouseSBND1
SBND1

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SBND1		Project: ON11	
Date: 12/11/15		Project Number: 033415026	
Logged By: Dustin Held		Drilled By: Hime Drilling	
Drilling Method: Air Rotary		Sampling Method: Split Spoon	
Seal: Bentonite Chips		Grout: NA	
Elevation: 5932	Detector: PID	Hole Diameter: 6"	Depth to Liquid: NA
Gravel Pack: Silica Sand		Diameter: 2"	Length: 5'
Casing Type: PVC		Diameter: 2"	Length: 15'
Screen Type: PVC		Slot: 0.020	Total Depth: 20'
		Depth to Water: NA	

Penetration Resistance	Staining?	Odor?	Moisture Content	PID (ppm)	Time	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
						0				
						2				
						4				
	NO	NO	dry	0.16ppm	1235	6		CL	5-5.5' brown silty clay, thick dense, w/ interbedded shale pieces, clay 45%, silt 35%, 20% sand	
						8				
	NO	NO	moist	0.16ppm	1310	10		CL	10-10.5' brown silty clay w/ interbedded shale pieces / basalt clasts, clay 60%, silt 25%, 15% sand	
						12				
	NO	NO	moist	0.16ppm	1330	14		CH	14-16' brown, thick silty clay, clay 60%, silt 25%, 15% sand, interbedded angular pieces	
						16				
						18				
						20			- submit	
	NO	NO	moist	0.16ppm	1340	22		CH	20-22' brown thick clay w/ interbedded shale pieces, clay 60%, silt 30%, 10% sand	
						24				
						26			- submit	
						28				
						30				
						32				
						34				
						36				
						38				
						40				
						42				

ON11



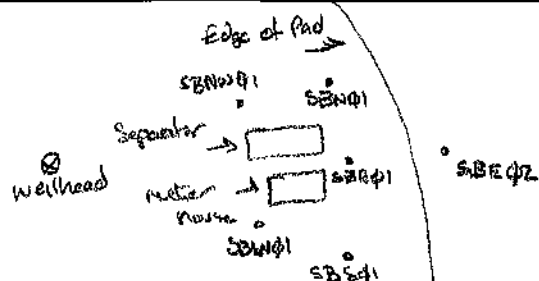
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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SBNW01		Project: ON11	
Date: 12/17/15		Project Number: 033415026	
Logged By: Dustin Held		Drilled By: Hime Drilling	
Drilling Method: Air Rotary		Sampling Method: Split Spoon	
Seal: Bentonite Chips		Grout: NA	
Elevation: 5930	Detector: PID	Diameter: 2"	Length: 5'
Gravel Pack: Silica Sand		Hole Diameter: 6"	Depth to Liquid: NA
Casing Type: PVC		Total Depth: 20'	Depth to Water: NA
Screen Type: PVC		Slot: 0.020	Diameter: 2"
		Length: 15'	

Penetration Resistance	Staining?	Odor?	Moisture Content	PID (ppm)	Time	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
						0				
						2				
						4				
	NO	NO	dry	0.0ppm	1520	6	X	CH	5-7' - brown thick clay, clay 70%, 20% sand - sample collected from cuttings.	
						8				
	NO	NO	dry	0.3ppm	1540	10	X	CL	10-11' - brown, silty clay w/ interbedded shale pieces, silt 40%, clay 40%, sand 20%	
						12				
						14		C4		
	NO	NO	dry	0.8ppm	1600	16	X		15-17' - same as above (soil dep) - submit	
						18				
	NO	NO	dry	0.7ppm	1620	20	X	C4	20-22' - brown thick clay, clay 40%, silt 40%, sand 10%	
						22			- submit	
						24				
						26			TD = 20' bgs	
						28				
						30				
						32				
						34				
						36				
						38				
						40				
						42				

ON11



4N



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SBWQ2		Project: ON11	
Date: 12/8/15		Project Number: 033415026	
Logged By: Dustin Held		Drilled By: Hime Drilling	
Drilling Method: Air Rotary		Sampling Method: Split Spoon	
Seal: Bentonite Chips		Grout: NA	
Elevation: 5935	Detector: PID	Hole Diameter: 6"	Depth to Liquid: NA
Gravel Pack: Silica Sand		Total Depth: 34'	Depth to Water: NA
Casing Type: PVC	Slot: 0.020	Diameter: 2"	Length: 14'
Screen Type: PVC	Slot: 0.020	Diameter: 2"	Length: 16'

Penetration Resistance	Staining?	Odor?	Moisture Content	PID (ppm)	Time	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
						0				
						2				
						4		CL	Advance boring 10' prior to sample collection	
						6				
						8				
	NO	NO	moist	0.2ppm	1050	10		CL	10-10.5' - brown silty clay w/ interbedded shale	
						12				
	NO	NO	moist	0.1ppm	1105	14			14-15.5' - tan brown silty clay w/ interbedded shale pieces, angular clay 40%, silt 45%, sand 15%	
						16		CL		
						18				
	NO	NO	dry	0.0ppm	1130	20			20-21' - same as above (soil drying)	
						22			- silt	
						24				
	NO	NO	moist	0.7ppm	1150	26		CL	25-26' - tan brown silty clay w/ interbedded shale lenses, oxides	
						28				
	NO	NO	moist	0.3ppm	1215	30		CL	30-31.5' - brown fine clay, w/ interbedded silts, limestone rock @ 31.5'	
						32				
						34				
	NO	NO	moist	0.2ppm	1250	36		CH	34-36' - brown fine clay w/ interbedded shale pieces, angular shale pieces, pebbles small (1-2mm)	
						38				
						40				
						42			PID = 0.2ppm Petro Flgs = 25ppm - silt	

ON11



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SBW01		Project: ON11	
Date: 12/18/15		Project Number: Q3415026	
Logged By: Dustin Held		Drilled By: Hime Drilling	
Drilling Method: Air Rotary		Sampling Method: Split Spoon	
Seal: Bentonite Chips		Grout: NA	
Elevation: 5930	Detector: PID	Hole Diameter: 6"	Depth to Liquid: NA
Gravel Pack: Silica Sand		Diameter: 2"	Length: 5'
Casing Type: PVC		Hole Diameter: 6"	Depth to Water: NA
Screen Type: PVC		Total Depth: 25'	Depth to Water: NA
Slot: 0.020		Diameter: 2"	Length: 20'

Penetration Resistance	Staining?	Odor?	Moisture Content	PID (ppm)	Time	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
						0				
						2				
	NO	NO	Dry	0.1ppm	0940	4	X	CL	3-5' - brown unconsolidated, silty clay, interbedded gravel / shale pieces	
						6			silt 40%, clay 35%, 25% sand	
						8				
	NO	NO	moist	0.7ppm	0800	10	X	CL	9-11' - brown unconsolidated silty clay, clay 45%, silt 40%, sand 15%, interbedded shale pieces	
						12				
						14				
	NO	NO	moist	0.5ppm	0825	16	X	CL	15-15.1 - same as above (soil drop)	
						18				
	NO	NO	moist	1.1ppm	0845	20	X	CL	19-20' - brown tan silty clay, clay 50%, silt 35%, sand 15%, calcareous - subunit - Petro Flag = 45ppm	
						22				
	NO	yes	moist	0.5ppm	0905	24	X	CL	24-24.5' - tan brown silty clay w/ interbedded shale pieces, clay 45%, silt 40%, 20% sand - subunit	
						26				
						28				
						30				
						32				
						34				
						36				
						38				
						40				
						42				

TD=24' bgs