

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

RECEIVED
4/10/2014

Spill report taken by:

FACILITY ID:

SPILL/RELEASE REPORT

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: _____ OGCC Operator No: _____	Phone Numbers No: _____ Fax: _____ E-Mail: _____
Address: _____	
City: _____ State: _____ Zip: _____	
Contact Person: _____	

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: _____ Facility Name & No.: _____	County: _____
Type of Facility (well, tank battery, flow line, pit): _____	QtrQtr: _____ Section: _____
Well Name and Number: _____	Township: _____ Range: _____
API Number: _____	Meridian: _____
Specify volume spilled and recovered (in bbls) for the following materials: Oil spilled: _____ Oil recov'd: _____ Water spilled: _____ Water recov'd: _____ Other spilled: _____ Other recov'd: _____	
Ground Water impacted? Yes No	Surface Water impacted? Yes No
Contained within berm? Yes No	Area and vertical extent of spill: _____ x _____
Current land use: _____ Weather conditions: _____	
Soil/geology description: _____	
IF LESS THAN A MILE , report distance IN FEET to nearest.... Surface water: _____ wetlands: _____ buildings: _____	
Livestock: _____ water wells: _____ Depth to shallowest ground water: _____	
Cause of spill (e.g., equipment failure, human error, etc.): _____ Detailed description of the spill/release incident: _____	

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):
Describe any emergency pits constructed:
How was the extent of contamination determined:
Further remediation activities proposed (attach separate sheet if needed):
Describe measures taken to prevent problem from reoccurring:

OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

Date	Agency	Contact	Phone	Response

Spill/Release Tracking No: **2148499**

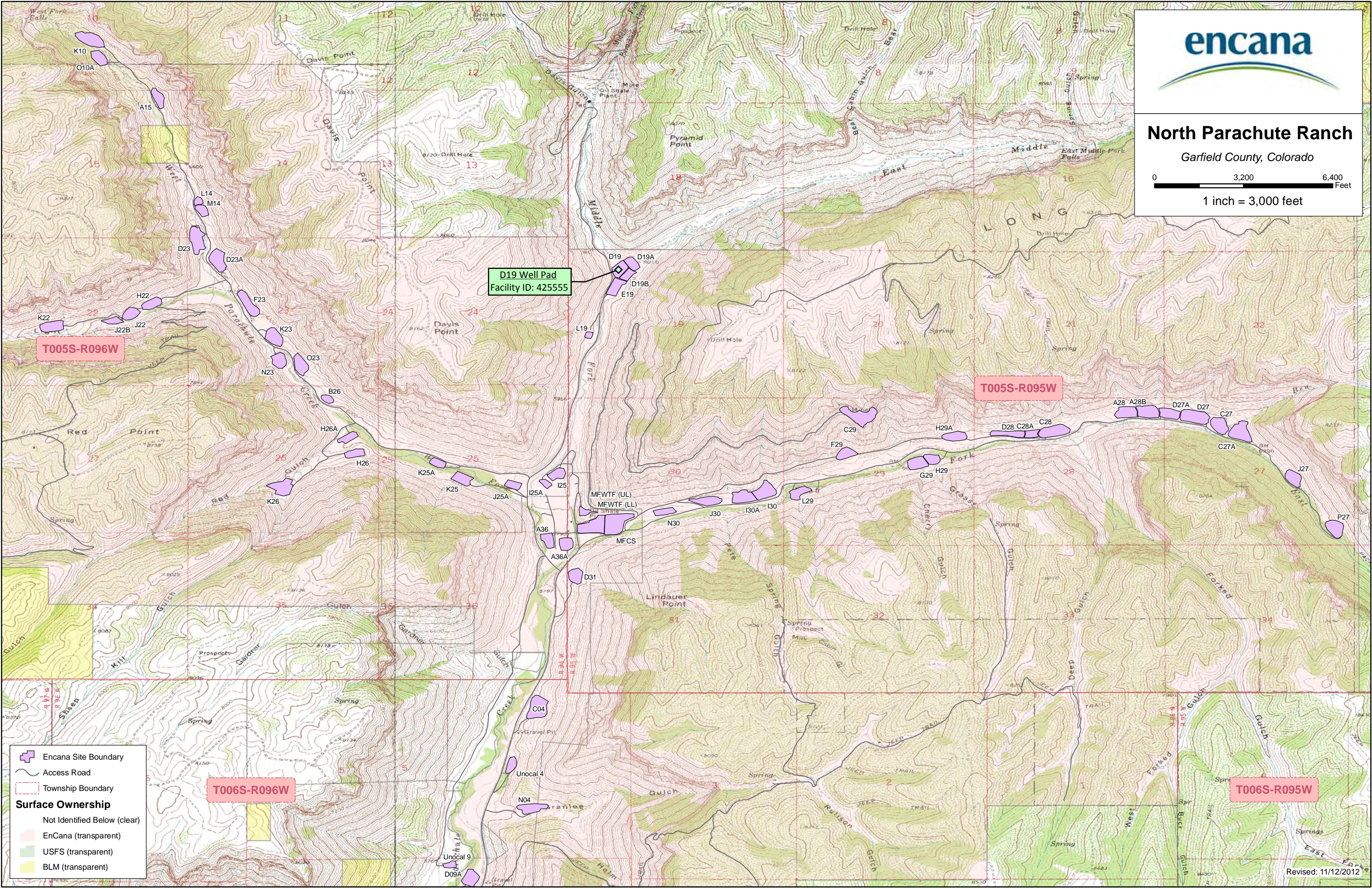


North Parachute Ranch

Garfield County, Colorado

0 3,200 6,400 Feet

1 inch = 3,000 feet



Encana Site Boundary

Access Road

Township Boundary

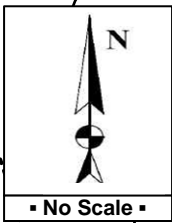
Surface Ownership

Not Identified Below (clear)

EnCana (transparent)

USFS (transparent)

BLM (transparent)



Middle Fork
Storage Yard

D19A
Well Pad

Disturbed
Area

Disturbed Area

Reserve Pit

Ewall

Access Road

Nwall

Emidbot

Wbot

Wellheads

Swall

Edge of Working Surface

Disturbed Area

Wwall

D19B
Well Pad

Disturbed Area

Middle Fork Road

Access Road

Edge of Disturbance

● - Below-liner sample location



Pad: D19 [Location ID: 335839]

Area: North Parachute Ranch

Legal: NENW, Sec. 19, T5S, R95W, 6th PM

Allowable Concentration →						Organic Compounds in Soil (mg/kg [ppm])																				Inorganics in Soil		Metals in Soil (mg/kg [ppm])													
						TPH (total volatile and extractable petroleum hydrocarbons)	TPH-GRO (C6-C10) Low Fraction	TPH-LRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Benzo(A)pyrene	Chrysene	Dibenz(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-C)Dipyrrene	Naphthalene	Pyrene	EC (<4 mm) (soil 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	
Location	Lab	Sampler	Sample Date	Sample Matrix	Matrix Notes	500			0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000		<12	6-9	0.39	15000	70	120000	23	3100	400	23	1600	390	390	23000	
D19	SS	MK	10/25/13	Pit	West Wall	8125	25	8100	0.0034	ND	ND	0.025																													
D19	SS	MK	10/25/13	Pit	West Bottom	586	6	580	0.0054	ND	ND	0.019																													
D19	SS	MK	10/25/13	Pit	North Wall	1602.1	2.1	1600	ND	ND	ND	ND																													
D19	SS	MK	10/25/13	Pit	South Wall	8549	49	8500	0.0033	ND	ND	0.02																													
D19	SS	MK	10/25/13	Pit	East Mid Bottom	460	110	350	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0429	ND	0.106	0.006	1.62	10.4	8.13	11.5	1690	0.508	21.1	1.2	16.1	18	0.0453	15.8	0.14	0.0948	35.6	
D19	SS	MK	10/25/13	Pit	East Wall	10130	130	10000	ND	ND	ND	ND																													

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 31, 2013

Christopher C. Hines
Encana Oil & Gas
143 Diamond Avenue
Parachute, CO 81635
RE: D19 Pit Bottom

Enclosed are the results of analyses for samples received by Summit Scientific on 10/26/13 08:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'BS' or 'Shrewsbury', written in a cursive style.

Ben Shrewsbury
President / Laboratory Manager



Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
102513-D19Pit(WWall)	R310267-01	Soil	10/25/13 10:45	10/26/13 08:45
102513-D19Pit(WBot)	R310267-02	Soil	10/25/13 10:50	10/26/13 08:45
102513-D19Pit(NWall)	R310267-03	Soil	10/25/13 10:55	10/26/13 08:45
102513-D19Pit(SWall)	R310267-04	Soil	10/25/13 11:00	10/26/13 08:45
102513-D19Pit(EMidBot)	R310267-05	Soil	10/25/13 11:05	10/26/13 08:45
102513-D19Pit(EWall)	R310267-06	Soil	10/25/13 11:10	10/26/13 08:45

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom

Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Summit Scientific

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9510 • 303-374-5933 Fax

Client: Encana Oil & Gas

Address: 143 Diamond Ave

City/State/Zip: D19 81635

Phone:

Fax:

Sample Name: D19 Pit Bottom

Project Manager: C. Hines

Email: chhines@encana.com

Project Name: D19 Pit Bottom

Project Number: D19

Page 1 of 1

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	SPH	SPH SIM	SPH	SPH + CR3	
10453-D19 Pit Bottom	10/25/13	5:05	2			X										
10453-D19 Pit Bottom	10/25/13	5:05	2			X										
10453-D19 Pit Bottom	10/25/13	5:05	2			X										
10453-D19 Pit Bottom	10/25/13	5:05	2			X										
10453-D19 Pit Bottom	10/25/13	5:05	3			X										
10453-D19 Pit Bottom	10/25/13	5:05	2			X										

Relinquished by:	Date Time:	Received by:	Date Time:	Turn Around Time (Check)	Notes
10453-D19 Pit Bottom	10/25/13 18:00	10/25/13 17:00	10/25/13 17:00	72 Hours	Please note: Some samples are not up for analysis.
10453-D19 Pit Bottom	10/25/13 18:00	10/25/13 17:00	10/25/13 17:00	72 Hours	Please note: Some samples are not up for analysis.
10453-D19 Pit Bottom	10/25/13 18:00	10/25/13 17:00	10/25/13 17:00	72 Hours	Please note: Some samples are not up for analysis.

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

**102513-D19Pit(WWall)
R310267-01 (Soil)**

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/25/13 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	8100	50	mg/kg	1	3102818	10/28/13	10/30/13	8015M	

Date Sampled: 10/25/13 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		163 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/25/13 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0034	0.0020	mg/kg	1	3102819	10/28/13	10/29/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.025	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	25	0.50	"	"	"	"	"	"	

Date Sampled: 10/25/13 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

102513-D19Pit(WBot)
R310267-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	580	50	mg/kg	1	3102818	10/28/13	10/30/13	8015M	

Date Sampled: **10/25/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0054	0.0020	mg/kg	1	3102819	10/28/13	10/29/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.019	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	6.0	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

102513-D19Pit(NWall)
R310267-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1600	50	mg/kg	1	3102818	10/28/13	10/30/13	8015M	

Date Sampled: **10/25/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		122 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3102819	10/28/13	10/29/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	2.1	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

102513-D19Pit(SWall)
R310267-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/25/13 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	8500	50	mg/kg	1	3102818	10/28/13	10/30/13	8015M	

Date Sampled: 10/25/13 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		64.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/25/13 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0033	0.0020	mg/kg	1	3102819	10/28/13	10/30/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.020	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	49	0.50	"	"	"	"	"	"	

Date Sampled: 10/25/13 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		121 %	21-167		"	"	"	"	

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

102513-D19Pit(EMidBot)
R310267-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	350	50	mg/kg	1	3102818	10/28/13	10/30/13	8015M	

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3102819	10/28/13	10/30/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.011	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	110	5.0	"	10	"	"	"	"	

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	3102811	10/28/13	10/28/13	EPA 8270D SIM	
Acenaphthylene	ND	0.00500	"	"	"	"	"	"	

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

**102513-D19Pit(EMidBot)
R310267-05 (Soil)**

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	3102811	10/28/13	10/28/13	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	0.0429	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	0.106	0.00500	"	"	"	"	"	"	
Phenanthrene	0.0496	0.00500	"	"	"	"	"	"	
Pyrene	0.00601	0.00500	"	"	"	"	"	"	

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		80.6 %	50-150		"	"	"	"	
Surrogate: Fluoranthene-d10		80.3 %	50-150		"	"	"	"	

Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	11.5	0.0891	mg/kg dry	1	3102804	10/28/13	10/29/13	EPA 6020A	
Barium	1690	0.0891	"	"	"	"	"	"	
Cadmium	0.508	0.0891	"	"	"	"	"	"	
Chromium	22.3	0.445	"	"	"	"	"	"	
Copper	16.1	0.445	"	"	"	"	"	"	
Lead	18.0	0.0891	"	"	"	"	"	"	
Nickel	15.8	0.0891	"	"	"	"	"	"	
Selenium	0.142	0.0445	"	"	"	"	"	"	
Silver	0.0948	0.0891	"	"	"	"	"	"	
Zinc	35.6	8.91	"	"	"	"	"	"	

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

**102513-D19Pit(EMidBot)
R310267-05 (Soil)**

Summit Scientific

Total Mercury by EPA Method 7471/7470/245.1

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	0.0453	0.0426	mg/kg dry	1	3102803	10/28/13	10/28/13	EPA 7471	

Hexavalent Chromium by EPA 7196

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	1.17	mg/kg dry	1	3102901	10/29/13	10/29/13	EPA 7196	

Calculated Analytes

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium+3 Calculated	21.1	1.00	mg/kg	1	3103107	10/31/13	10/31/13	Calculation	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	970	9.71	mg/kg dry	1	3102810	10/28/13	10/29/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	87.2	4.86	"	"	"	"	"	"	
Sodium	1260	4.86	"	"	"	"	"	"	

Date Sampled: 10/25/13 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	10.4		units	"	3102821	10/28/13	10/31/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

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143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

102513-D19Pit(EMidBot)
R310267-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/25/13 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.62	0.0100	mmhos/cm	1	3102808	10/28/13	10/28/13	SM 2510B	

Date Sampled: **10/25/13 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.13	0.100	pH Units	"	3102913	10/29/13	10/30/13	EPA 9045	

Date Sampled: **10/25/13 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.3		%	"	3102820	10/28/13	10/30/13	% calculation	

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

102513-D19Pit(EWall)
R310267-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/25/13 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	10000	50	mg/kg	1	3102818	10/28/13	10/30/13	8015M	

Date Sampled: 10/25/13 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		191 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/25/13 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3102819	10/28/13	10/30/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	130	5.0	"	10	"	"	"	"	

Date Sampled: 10/25/13 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102818 - EPA 3550A

Blank (3102818-BLK1)				Prepared: 10/28/13 Analyzed: 10/29/13							
C10-C28 (DRO)	ND	50	mg/kg								
LCS (3102818-BS1)				Prepared: 10/28/13 Analyzed: 10/29/13							
C10-C28 (DRO)	443	50	mg/kg	501		88.4	73-134				
LCS (3102818-BS2)				Prepared: 10/28/13 Analyzed: 10/30/13							
C10-C28 (DRO)	456	50	mg/kg	501		91.0	73-134				
LCS Dup (3102818-BSD1)				Prepared: 10/28/13 Analyzed: 10/30/13							
C10-C28 (DRO)	453	50	mg/kg	501		90.4	73-134	2.25	11		
LCS Dup (3102818-BSD2)				Prepared: 10/28/13 Analyzed: 10/30/13							
C10-C28 (DRO)	471	50	mg/kg	501		94.0	73-134	3.22	11		
Matrix Spike (3102818-MS1)				Source: R310272-01		Prepared: 10/28/13 Analyzed: 10/30/13					
C10-C28 (DRO)	455	50	mg/kg	496	ND	91.7	50-148				
Matrix Spike (3102818-MS2)				Source: R310272-02		Prepared: 10/28/13 Analyzed: 10/30/13					
C10-C28 (DRO)	463	50	mg/kg	480	ND	96.5	50-148				
Matrix Spike Dup (3102818-MSD1)				Source: R310272-01		Prepared: 10/28/13 Analyzed: 10/30/13					
C10-C28 (DRO)	482	50	mg/kg	495	ND	97.4	50-148	5.87	13		
Matrix Spike Dup (3102818-MSD2)				Source: R310272-02		Prepared: 10/28/13 Analyzed: 10/30/13					
C10-C28 (DRO)	453	50	mg/kg	483	ND	93.8	50-148	2.27	13		

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102819 - EPA 5030 Soil MS

Blank (3102819-BLK1)

Prepared: 10/28/13 Analyzed: 10/29/13

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0397	109	23-173				
Surrogate: Toluene-d8	0.0390		"	0.0400	97.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400	101	21-167				

LCS (3102819-BS1)

Prepared: 10/28/13 Analyzed: 10/29/13

Benzene	0.0824	0.0020	mg/kg	0.100	82.4	58-130				
Toluene	0.0944	0.0050	"	0.100	94.4	61-134				
Ethylbenzene	0.111	0.0050	"	0.100	111	74-139				
m,p-Xylene	0.215	0.010	"	0.200	107	73-137				
o-Xylene	0.108	0.0050	"	0.100	108	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0435		"	0.0397	110	23-173				
Surrogate: Toluene-d8	0.0398		"	0.0400	99.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400	100	21-167				

LCS (3102819-BS2)

Prepared: 10/28/13 Analyzed: 10/30/13

Benzene	0.0826	0.0020	mg/kg	0.100	82.6	58-130				
Toluene	0.0941	0.0050	"	0.100	94.1	61-134				
Ethylbenzene	0.109	0.0050	"	0.100	109	74-139				
m,p-Xylene	0.211	0.010	"	0.200	105	73-137				
o-Xylene	0.107	0.0050	"	0.100	107	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0397	111	23-173				
Surrogate: Toluene-d8	0.0394		"	0.0400	98.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400	100	21-167				

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102819 - EPA 5030 Soil MS

LCS Dup (3102819-BSD1)

Prepared: 10/28/13 Analyzed: 10/29/13

Benzene	0.0829	0.0020	mg/kg	0.100		82.9	58-130	0.690	13	
Toluene	0.0946	0.0050	"	0.100		94.6	61-134	0.254	16	
Ethylbenzene	0.111	0.0050	"	0.100		111	74-139	0.108	12	
m,p-Xylene	0.215	0.010	"	0.200		107	73-137	0.112	14	
o-Xylene	0.108	0.0050	"	0.100		108	73-141	0.416	12	
Surrogate: 1,2-Dichloroethane-d4	0.0431		"	0.0397		109	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		100	21-167			

LCS Dup (3102819-BSD2)

Prepared: 10/28/13 Analyzed: 10/30/13

Benzene	0.0820	0.0020	mg/kg	0.100		82.0	58-130	0.838	13	
Toluene	0.0928	0.0050	"	0.100		92.8	61-134	1.44	16	
Ethylbenzene	0.110	0.0050	"	0.100		110	74-139	0.848	12	
m,p-Xylene	0.213	0.010	"	0.200		106	73-137	0.836	14	
o-Xylene	0.107	0.0050	"	0.100		107	73-141	0.393	12	
Surrogate: 1,2-Dichloroethane-d4	0.0427		"	0.0397		108	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0395		"	0.0400		98.7	21-167			

Matrix Spike (3102819-MS1)

Source: R310272-01

Prepared: 10/28/13 Analyzed: 10/30/13

Benzene	0.0793	0.0020	mg/kg	0.0943	ND	84.1	30-131			
Toluene	0.0909	0.0050	"	0.0943	ND	96.4	30-134			
Ethylbenzene	0.104	0.0050	"	0.0943	ND	110	22-153			
m,p-Xylene	0.201	0.010	"	0.189	ND	107	10-159			
o-Xylene	0.101	0.0050	"	0.0943	ND	107	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0432		"	0.0375		115	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0377		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0377		100	21-167			

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102819 - EPA 5030 Soil MS

Matrix Spike (3102819-MS2)

Source: R310272-02

Prepared: 10/28/13

Analyzed: 10/30/13

Benzene	0.0784	0.0020	mg/kg	0.0986	ND	79.5	30-131			
Toluene	0.0919	0.0050	"	0.0986	ND	93.2	30-134			
Ethylbenzene	0.110	0.0050	"	0.0986	ND	111	22-153			
m,p-Xylene	0.212	0.010	"	0.197	ND	108	10-159			
o-Xylene	0.107	0.0050	"	0.0986	ND	109	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0420		"	0.0392		107	23-173			
Surrogate: Toluene-d8	0.0388		"	0.0394		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0394		101	21-167			

Matrix Spike Dup (3102819-MSD1)

Source: R310272-01

Prepared: 10/28/13

Analyzed: 10/30/13

Benzene	0.0798	0.0020	mg/kg	0.0945	ND	84.4	30-131	0.581	34	
Toluene	0.0904	0.0050	"	0.0945	ND	95.7	30-134	0.530	30	
Ethylbenzene	0.106	0.0050	"	0.0945	ND	112	22-153	1.27	24	
m,p-Xylene	0.203	0.010	"	0.189	ND	107	10-159	0.890	68	
o-Xylene	0.103	0.0050	"	0.0945	ND	109	31-151	1.96	38	
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0375		110	23-173			
Surrogate: Toluene-d8	0.0370		"	0.0378		97.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0378		100	21-167			

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102811 - EPA 5030 Soil MS

Blank (3102811-BLK1)

Prepared & Analyzed: 10/28/13

Acenaphthene	ND	0.00500	mg/kg
Acenaphthylene	ND	0.00500	"
Anthracene	ND	0.00500	"
Benzo (a) anthracene	ND	0.00500	"
Benzo (b) fluoranthene	ND	0.00500	"
Benzo (k) fluoranthene	ND	0.00500	"
Benzo (g,h,i) perylene	ND	0.00500	"
Benzo (a) pyrene	ND	0.00500	"
Chrysene	ND	0.00500	"
Dibenz (a,h) anthracene	ND	0.00500	"
Fluoranthene	ND	0.00500	"
Fluorene	ND	0.00500	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"
Naphthalene	ND	0.00500	"
Phenanthrene	ND	0.00500	"
Pyrene	ND	0.00500	"

Surrogate: 2-Methylnaphthalene-d10	0.0168		"	0.0174	96.7	50-150
Surrogate: Fluoranthene-d10	0.0180		"	0.0172	105	50-150

LCS (3102811-BS1)

Prepared & Analyzed: 10/28/13

Acenaphthene	0.0184	0.00500	mg/kg	0.0167	110	50-150
Acenaphthylene	0.0188	0.00500	"	0.0167	113	50-150
Anthracene	0.0147	0.00500	"	0.0167	88.0	50-150
Benzo (a) anthracene	0.0186	0.00500	"	0.0167	111	50-150
Benzo (b) fluoranthene	0.0180	0.00500	"	0.0167	108	50-150
Benzo (k) fluoranthene	0.0159	0.00500	"	0.0167	95.4	50-150
Benzo (g,h,i) perylene	0.0180	0.00500	"	0.0167	108	50-150
Benzo (a) pyrene	0.0170	0.00500	"	0.0167	102	50-150
Chrysene	0.0173	0.00500	"	0.0167	104	50-150
Dibenz (a,h) anthracene	0.0168	0.00500	"	0.0167	101	50-150
Fluoranthene	0.0162	0.00500	"	0.0167	97.3	50-150
Fluorene	0.0185	0.00500	"	0.0167	111	50-150
Indeno (1,2,3-cd) pyrene	0.0164	0.00500	"	0.0167	98.6	50-150
Naphthalene	0.0167	0.00500	"	0.0167	100	50-150
Phenanthrene	0.0171	0.00500	"	0.0167	103	50-150
Pyrene	0.0189	0.00500	"	0.0167	113	50-150

Surrogate: 2-Methylnaphthalene-d10	0.0197		"	0.0174	113	50-150
Surrogate: Fluoranthene-d10	0.0181		"	0.0172	105	50-150

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

Analyte	Reporting			Spike Level	Source		%REC		RPD	
	Result	Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

Batch 3102811 - EPA 5030 Soil MS

LCS Dup (3102811-BSD1)

Prepared & Analyzed: 10/28/13

Acenaphthene	0.0190	0.00500	mg/kg	0.0167	114	50-150	3.51	20	
Acenaphthylene	0.0194	0.00500	"	0.0167	116	50-150	2.82	20	
Anthracene	0.0136	0.00500	"	0.0167	81.7	50-150	7.50	20	
Benzo (a) anthracene	0.0196	0.00500	"	0.0167	117	50-150	5.19	20	
Benzo (b) fluoranthene	0.0196	0.00500	"	0.0167	118	50-150	8.62	20	
Benzo (k) fluoranthene	0.0179	0.00500	"	0.0167	107	50-150	11.6	20	
Benzo (g,h,i) perylene	0.0185	0.00500	"	0.0167	111	50-150	2.27	20	
Benzo (a) pyrene	0.0190	0.00500	"	0.0167	114	50-150	11.0	20	
Chrysene	0.0174	0.00500	"	0.0167	104	50-150	0.257	20	
Dibenz (a,h) anthracene	0.0160	0.00500	"	0.0167	95.8	50-150	5.01	20	
Fluoranthene	0.0150	0.00500	"	0.0167	90.3	50-150	7.54	20	
Fluorene	0.0188	0.00500	"	0.0167	113	50-150	1.56	20	
Indeno (1,2,3-cd) pyrene	0.0188	0.00500	"	0.0167	113	50-150	13.7	20	
Naphthalene	0.0181	0.00500	"	0.0167	109	50-150	8.11	20	
Phenanthrene	0.0155	0.00500	"	0.0167	92.7	50-150	10.2	20	
Pyrene	0.0183	0.00500	"	0.0167	110	50-150	3.12	20	
Surrogate: 2-Methylnaphthalene-d10	0.0179		"	0.0174	103	50-150			
Surrogate: Fluoranthene-d10	0.0144		"	0.0172	83.8	50-150			

Matrix Spike (3102811-MS1)

Source: R310228-01

Prepared & Analyzed: 10/28/13

Acenaphthene	0.0176	0.00500	mg/kg	0.0167	ND	106	50-150		
Acenaphthylene	0.0160	0.00500	"	0.0167	ND	96.1	50-150		
Anthracene	0.0134	0.00500	"	0.0167	0.000589	76.8	50-150		
Benzo (a) anthracene	0.0244	0.00500	"	0.0167	ND	146	50-150		
Benzo (b) fluoranthene	0.0231	0.00500	"	0.0167	ND	139	50-150		
Benzo (k) fluoranthene	0.0152	0.00500	"	0.0167	ND	91.0	50-150		
Benzo (g,h,i) perylene	0.0121	0.00500	"	0.0167	ND	72.7	50-150		
Benzo (a) pyrene	0.0187	0.00500	"	0.0167	ND	112	50-150		
Chrysene	0.0165	0.00500	"	0.0167	0.00146	90.1	50-150		
Dibenz (a,h) anthracene	0.0142	0.00500	"	0.0167	ND	85.3	50-150		
Fluoranthene	0.0140	0.00500	"	0.0167	ND	84.0	50-150		
Fluorene	0.0257	0.00500	"	0.0167	0.00570	120	50-150		
Indeno (1,2,3-cd) pyrene	0.0138	0.00500	"	0.0167	ND	82.9	50-150		
Naphthalene	0.0155	0.00500	"	0.0167	0.000754	88.3	50-150		
Phenanthrene	0.0350	0.00500	"	0.0167	0.0142	125	50-150		
Pyrene	0.0181	0.00500	"	0.0167	ND	108	50-150		
Surrogate: 2-Methylnaphthalene-d10	0.0187		"	0.0174	108	50-150			
Surrogate: Fluoranthene-d10	0.0152		"	0.0172	88.4	50-150			

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102811 - EPA 5030 Soil MS

Matrix Spike Dup (3102811-MSD1)		Source: R310228-01			Prepared & Analyzed: 10/28/13					
Acenaphthene	0.0171	0.00500	mg/kg	0.0167	ND	103	50-150	3.02	20	
Acenaphthylene	0.0168	0.00500	"	0.0167	ND	101	50-150	4.88	20	
Anthracene	0.0139	0.00500	"	0.0167	0.000589	80.0	50-150	3.86	20	
Benzo (a) anthracene	0.0227	0.00500	"	0.0167	ND	136	50-150	6.93	20	
Benzo (b) fluoranthene	0.0213	0.00500	"	0.0167	ND	128	50-150	8.44	20	
Benzo (k) fluoranthene	0.0142	0.00500	"	0.0167	ND	85.2	50-150	6.64	20	
Benzo (g,h,i) perylene	0.0140	0.00500	"	0.0167	ND	84.0	50-150	14.5	20	
Benzo (a) pyrene	0.0176	0.00500	"	0.0167	ND	106	50-150	5.75	20	
Chrysene	0.0150	0.00500	"	0.0167	0.00146	81.3	50-150	9.40	20	
Dibenz (a,h) anthracene	0.0156	0.00500	"	0.0167	ND	93.7	50-150	9.37	20	
Fluoranthene	0.0143	0.00500	"	0.0167	ND	85.7	50-150	1.90	20	
Fluorene	0.0222	0.00500	"	0.0167	0.00570	99.1	50-150	14.4	20	
Indeno (1,2,3-cd) pyrene	0.0154	0.00500	"	0.0167	ND	92.2	50-150	10.6	20	
Naphthalene	0.0162	0.00500	"	0.0167	0.000754	92.5	50-150	4.43	20	
Phenanthrene	0.0286	0.00500	"	0.0167	0.0142	86.0	50-150	20.2	20	
Pyrene	0.0174	0.00500	"	0.0167	ND	105	50-150	3.59	20	
Surrogate: 2-Methylnaphthalene-d10	0.0171		"	0.0174		98.5	50-150			
Surrogate: Fluoranthene-d10	0.0170		"	0.0172		98.8	50-150			

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102804 - EPA 3050B

Blank (3102804-BLK1)

Prepared: 10/28/13 Analyzed: 10/29/13

Arsenic	ND	0.100	mg/kg wet
Barium	ND	0.100	"
Cadmium	ND	0.100	"
Chromium	ND	0.500	"
Copper	ND	0.500	"
Lead	ND	0.100	"
Nickel	ND	0.100	"
Selenium	ND	0.0500	"
Silver	ND	0.100	"
Zinc	ND	10.0	"

LCS (3102804-BS1)

Prepared: 10/28/13 Analyzed: 10/29/13

Arsenic	2.31	0.100	mg/kg wet	2.50	92.6	80-120
Barium	227	0.100	"	225	101	80-120
Cadmium	0.984	0.100	"	1.00	98.2	80-120
Chromium	11.0	0.500	"	10.0	110	80-120
Copper	21.6	0.500	"	20.0	108	80-120
Lead	7.87	0.100	"	7.51	105	80-120
Nickel	15.1	0.100	"	15.0	101	80-120
Selenium	1.34	0.0500	"	1.25	107	80-120
Silver	0.213	0.100	"	0.250	85.3	80-120
Zinc	6.01	10.0	"	7.51	80.0	80-120

LCS Dup (3102804-BSD1)

Prepared: 10/28/13 Analyzed: 10/29/13

Arsenic	2.54	0.100	mg/kg wet	2.50	102	80-120	9.29	20
Barium	232	0.100	"	225	103	80-120	2.08	20
Cadmium	1.00	0.100	"	1.00	99.9	80-120	1.70	20
Chromium	11.5	0.500	"	10.0	115	80-120	4.34	20
Copper	22.1	0.500	"	20.0	111	80-120	2.26	20
Lead	7.93	0.100	"	7.52	105	80-120	0.698	20
Nickel	15.9	0.100	"	15.0	106	80-120	5.33	20
Selenium	1.33	0.0500	"	1.25	106	80-120	0.579	20
Silver	0.220	0.100	"	0.250	88.2	80-120	3.31	20
Zinc	6.35	10.0	"	7.52	84.5	80-120	5.47	20

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102804 - EPA 3050B

Matrix Spike (3102804-MS1)		Source: R310246-01			Prepared: 10/28/13		Analyzed: 10/29/13			
Arsenic	11.2	0.112	mg/kg dry	2.80	10.9	8.97	75-125			QM-07
Barium	314	0.112	"	252	249	26.0	75-125			QM-07
Cadmium	5.23	0.112	"	1.12	4.89	31.0	75-125			QM-07
Chromium	24.1	0.561	"	11.2	11.3	114	75-125			
Copper	43.4	0.561	"	22.4	27.0	73.1	75-125			QM-07
Lead	19.5	0.112	"	8.41	10.1	112	75-125			
Nickel	48.1	0.112	"	16.8	35.8	73.2	75-125			QM-07
Selenium	5.73	0.0561	"	1.40	6.21	NR	75-125			QM-07
Silver	0.433	0.112	"	0.280	0.245	67.1	75-125			QM-07
Zinc	73.4	11.2	"	8.41	70.2	38.4	75-125			QM-07

Matrix Spike Dup (3102804-MSD1)		Source: R310246-01			Prepared: 10/28/13		Analyzed: 10/29/13			
Arsenic	12.2	0.112	mg/kg dry	2.81	10.9	45.5	75-125	8.81	25	QM-07
Barium	340	0.112	"	253	249	36.0	75-125	7.84	25	QM-07
Cadmium	5.29	0.112	"	1.13	4.89	35.5	75-125	0.988	25	QM-07
Chromium	20.9	0.562	"	11.3	11.3	85.2	75-125	14.0	25	
Copper	40.7	0.562	"	22.5	27.0	60.9	75-125	6.30	25	QM-07
Lead	20.0	0.112	"	8.46	10.1	117	75-125	2.47	25	
Nickel	47.7	0.112	"	16.9	35.8	70.4	75-125	0.866	25	QM-07
Selenium	6.40	0.0562	"	1.41	6.21	13.3	75-125	11.0	25	QM-07
Silver	0.373	0.112	"	0.281	0.245	45.4	75-125	14.9	25	QM-07
Zinc	66.0	11.2	"	8.46	70.2	NR	75-125	10.7	25	QM-07

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Total Mercury by EPA Method 7471/7470/245.1 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102803 - EPA 7471A

Blank (3102803-BLK1)

Prepared & Analyzed: 10/28/13

Mercury ND 0.0500 mg/kg wet

LCS (3102803-BS1)

Prepared & Analyzed: 10/28/13

Mercury 0.425 0.0500 mg/kg wet 0.400 106 80-120

LCS Dup (3102803-BSD1)

Prepared & Analyzed: 10/28/13

Mercury 0.406 0.0500 mg/kg wet 0.400 102 80-120 4.53 20

Matrix Spike (3102803-MS1)

Source: R310246-01

Prepared & Analyzed: 10/28/13

Mercury 0.512 0.0576 mg/kg dry 0.461 0.0511 100 80-120

Matrix Spike Dup (3102803-MSD1)

Source: R310246-01

Prepared & Analyzed: 10/28/13

Mercury 0.504 0.0568 mg/kg dry 0.454 0.0511 99.7 80-120 1.66 20

Summit Scientific

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Encana Oil & Gas
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Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Hexavalent Chromium by EPA 7196 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102901 - General Preparation

Blank (3102901-BLK1)

Prepared & Analyzed: 10/29/13

Chromium, Hexavalent ND 1.00 mg/kg wet

LCS (3102901-BS1)

Prepared & Analyzed: 10/29/13

Chromium, Hexavalent 109 1.25 mg/kg wet 118 92.5 85-115

LCS Dup (3102901-BSD1)

Prepared & Analyzed: 10/29/13

Chromium, Hexavalent 103 1.25 mg/kg wet 117 87.5 85-115 5.63 20

Duplicate (3102901-DUP1)

Source: R310269-29

Prepared & Analyzed: 10/29/13

Chromium, Hexavalent ND 1.15 mg/kg dry 0.229 20

Matrix Spike (3102901-MS1)

Source: R310269-29

Prepared & Analyzed: 10/29/13

Chromium, Hexavalent 42.7 1.15 mg/kg dry 46.0 0.229 92.4 85-115

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102810 - EPA 3050B

Blank (3102810-BLK1)

Prepared & Analyzed: 10/28/13

Calcium	ND	10.0	mg/kg wet
Magnesium	ND	5.00	"
Sodium	ND	5.00	"

LCS (3102810-BS1)

Prepared & Analyzed: 10/28/13

Calcium	371	10.0	mg/kg wet	400	92.7	80-120
Magnesium	183	5.00	"	201	91.3	80-120
Sodium	448	5.00	"	501	89.4	80-120

LCS Dup (3102810-BSD1)

Prepared & Analyzed: 10/28/13

Calcium	415	10.0	mg/kg wet	401	104	80-120	11.2	20
Magnesium	206	5.00	"	201	102	80-120	11.7	20
Sodium	499	5.00	"	501	99.5	80-120	10.8	20

Matrix Spike (3102810-MS1)

Source: R310247-01

Prepared & Analyzed: 10/28/13

Calcium	1740	11.8	mg/kg dry	474	1070	143	75-125		QM-07
Magnesium	333	5.92	"	238	72.1	110	75-125		
Sodium	2800	5.92	"	593	2960	NR	75-125		QM-07

Matrix Spike Dup (3102810-MSD1)

Source: R310247-01

Prepared & Analyzed: 10/28/13

Calcium	1690	11.9	mg/kg dry	477	1070	131	75-125	2.95	25	QM-07
Magnesium	317	5.94	"	239	72.1	103	75-125	4.85	25	
Sodium	3120	5.94	"	596	2960	26.1	75-125	10.8	25	QM-07

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3102808 - General Preparation

Blank (3102808-BLK1)

Prepared & Analyzed: 10/28/13

Specific Conductance (EC) ND 0.0100 mmhos/cm

Duplicate (3102808-DUP1)

Source: R310246-01

Prepared & Analyzed: 10/28/13

Specific Conductance (EC) 2.89 0.0100 mmhos/cm 2.62 9.81 20

Batch 3102913 - General Preparation

LCS (3102913-BS1)

Prepared: 10/29/13 Analyzed: 10/30/13

pH 7.98 0.100 pH Units 8.00 99.8 0-200

LCS (3102913-BS2)

Prepared: 10/29/13 Analyzed: 10/30/13

pH 7.97 0.100 pH Units 8.00 99.6 0-200

Duplicate (3102913-DUP1)

Source: R310295-03

Prepared: 10/29/13 Analyzed: 10/30/13

pH 8.13 0.100 pH Units 8.10 0.370 20

Duplicate (3102913-DUP2)

Source: R310295-04

Prepared: 10/29/13 Analyzed: 10/30/13

pH 7.87 0.100 pH Units 7.95 1.01 20

Summit Scientific

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Encana Oil & Gas
143 Diamond Avenue
Parachute CO, 81635

Project: D19 Pit Bottom
Project Number: D19
Project Manager: Christopher C. Hines

Reported:
10/31/13 22:57

Notes and Definitions

S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference