

APPENDIX 1
NO4-696 BACKGROUND ARSENIC DATA



LEGEND

- Background Soil Sample
- Confirmation Soil Sample
- Excavation Extents
- Stockpile of Removed Soil

Figure 4

N04-696 BACKGROUND SAMPLING SITE MAP



Not to Scale

Site Location:

Grass Mesa
Garfield County, Colorado
Caerus Oil and Gas LLC



143 Diamond Ave
Parachute, CO 81635
PHONE: 970-285-2600

Diagram Created By: Jake Janicek (EHS Specialist)
Date: 5/16/2019

TABLE 1
O04-696 TO UNOCAL 5 BENEFICIAL REUSE PLAN
N04-696 BACKGROUND SOIL ANALYTICAL RESULTS
CAERUS OIL AND GAS LLC
PICEANCE BASIN, COLORADO

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	N04-NEB-051311	N04-NB-051311	N04-NWB-051311	N04-WB-051311
Sample Date			5/13/2011	5/13/2011	5/13/2011	5/13/2011
Sample Matix			Background	Background	Background	Background
Arsenic	0.39	mg/kg	6.6	7.8	22	3.8
Barium	15,000	mg/kg	NA	NA	NA	NA
Cadmium	70	mg/kg	NA	NA	NA	NA
Chromium (III)	120,000	mg/kg	NA	NA	NA	NA
Chromium (VI)	23	mg/kg	NA	NA	NA	NA
Copper	3,100	mg/kg	NA	NA	NA	NA
Lead	400	mg/kg	NA	NA	NA	NA
Mercury	23	mg/kg	NA	NA	NA	NA
Nickel	1,600	mg/kg	NA	NA	NA	NA
Selenium	390	mg/kg	NA	NA	NA	NA
Silver	390	mg/kg	NA	NA	NA	NA
Zinc	23,000	mg/kg	NA	NA	NA	NA
EC	4 or 2x background	mmhos/cm	NA	NA	NA	NA
pH	6-9	SU	NA	NA	NA	NA
SAR	12	unitless	NA	NA	NA	NA
TPH-DRO			NA	NA	NA	NA
TPH-GRO			NA	NA	NA	NA
TPH	500	mg/kg	NA	NA	NA	NA
Benzene	0.17	mg/kg	NA	NA	NA	NA
Toluene	85	mg/kg	NA	NA	NA	NA
Ethylbenzene	100	mg/kg	NA	NA	NA	NA
Total Xylenes	175	mg/kg	NA	NA	NA	NA
Acenaphthene	1,000	mg/kg	NA	NA	NA	NA
Anthracene	1,000	mg/kg	NA	NA	NA	NA
Benz(a)anthracene	0.22	mg/kg	NA	NA	NA	NA
Benzo(b)fluoranthene	0.22	mg/kg	NA	NA	NA	NA
Benzo(k)fluoranthene	2.2	mg/kg	NA	NA	NA	NA
Benzo(a)pyrene	0.022	mg/kg	NA	NA	NA	NA
Chrysene	22	mg/kg	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.022	mg/kg	NA	NA	NA	NA
Fluoranthene	1,000	mg/kg	NA	NA	NA	NA
Fluorene	1,000	mg/kg	NA	NA	NA	NA
Indeno(1,2,3,c,d)pyrene	0.22	mg/kg	NA	NA	NA	NA
Naphthalene	23	mg/kg	NA	NA	NA	NA
Pyrene	1,000	mg/kg	NA	NA	NA	NA

Notes:

< - less than the stated reporting limit

Highlight - indicates result exceeds the COGCC concentration level

COGCC - Colorado Oil and Gas Conservation Commission

EC - electrical conductivity

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

NA - not analyzed

ND - non detect

SAR - sodium adsorption ratio

SU - standard unit

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO and TPH-DRO



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

Report Summary

Tuesday May 24, 2011

Report Number: L516387

Samples Received: 05/17/11

Client Project:

Description: NO4

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

Entire Report Reviewed By:

Jayred Willis , ESC Representative

Laboratory Certification Numbers

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

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

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REPORT OF ANALYSIS

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

May 24, 2011

Date Received : May 17, 2011
Description : NO4
Sample ID : NO4-NEB-051311 6-10IN
Collected By : Jake Harris
Collection Date : 05/13/11 10:30

ESC Sample # : L516387-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	6.6	1.0	mg/kg	6010B	05/19/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/24/11 09:29 Printed: 05/24/11 10:34



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REPORT OF ANALYSIS

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

May 24, 2011

Date Received : May 17, 2011
Description : NO4
Sample ID : NO4-NB-051311 6-10IN
Collected By : Jake Harris
Collection Date : 05/13/11 10:35

ESC Sample # : L516387-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	7.8	1.0	mg/kg	6010B	05/19/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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

May 24, 2011

Date Received : May 17, 2011
Description : NO4
Sample ID : NO4-NWB-051311 6-10IN
Collected By : Jake Harris
Collection Date : 05/13/11 10:40

ESC Sample # : L516387-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	22.	1.0	mg/kg	6010B	05/19/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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

May 24, 2011

Date Received : May 17, 2011
Description : NO4
Sample ID : NO4-WB-051311 6-10IN
Collected By : Jake Harris
Collection Date : 05/13/11 10:45

ESC Sample # : L516387-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.8	1.0	mg/kg	6010B	05/19/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 05/24/11 09:29 Printed: 05/24/11 10:34

Summary of Remarks For Samples Printed
05/24/11 at 10:34:04

TSR Signing Reports: 358
R5 - Desired TAT

Sample: L516387-01 Account: ENCANACO Received: 05/17/11 09:00 Due Date: 05/24/11 00:00 RPT Date: 05/24/11 09:29
Sample: L516387-02 Account: ENCANACO Received: 05/17/11 09:00 Due Date: 05/24/11 00:00 RPT Date: 05/24/11 09:29
Sample: L516387-03 Account: ENCANACO Received: 05/17/11 09:00 Due Date: 05/24/11 00:00 RPT Date: 05/24/11 09:29
Sample: L516387-04 Account: ENCANACO Received: 05/17/11 09:00 Due Date: 05/24/11 00:00 RPT Date: 05/24/11 09:29



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

Quality Assurance Report
Level II

L516387

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Analyte	Result	Laboratory Blank				Limit	Batch	Date Analyzed		
		Units		% Rec						
Arsenic	< 1	mg/kg					WG536127	05/19/11	12:12	
Analyte	Units	Duplicate				Limit	Ref Samp	Batch		
		Result	Duplicate	RPD						
Arsenic	mg/kg	5.50	6.30	13.9	20		L516426-03	WG536127		
Analyte	Units	Laboratory Control Sample				% Rec	Limit	Batch		
		Known Val	Result							
Arsenic	mg/kg	192		162.		84.4		78.6-120.8	WG536127	
Analyte	Units	Matrix Spike				% Rec	Limit	Ref Samp	Batch	
		MS Res	Ref Res	TV						
Arsenic	mg/kg	47.3	6.30	50	82.0		75-125	L516426-03	WG536127	
Analyte	Units	Matrix Spike Duplicate				Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec						
Arsenic	mg/kg	47.1	47.3	81.6	75-125	0.424	20		L516426-03	WG536127

Batch number /Run number / Sample number cross reference

WG536127: R1693371: L516387-01 02 03 04

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



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

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

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

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