



08-Nov-2017

Jake Janicek
Caerus Oil and Gas LLC
120 N. Railroad Ave. Suite D
Parachute, CO 81635

Re: **H2-797**

Work Order: **1711163**

Dear Jake,

ALS Environmental received 6 samples on 02-Nov-2017 09:30 AM for the analyses presented in the following report.

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

Sample results are compliant with industry accepted practices and Quality Control 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 32.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

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

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Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Caerus Oil and Gas LLC
Project: H2-797
Work Order: 1711163

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>
1711163-01	20171101-H2-797-Bottom (6')	Soil		11/1/2017 11:45	11/2/2017 09:30	<input type="checkbox"/>
1711163-02	20171101-H2-797-SWALL (5')	Soil		11/1/2017 13:00	11/2/2017 09:30	<input type="checkbox"/>
1711163-03	20171101-H2-797-EWALL (4')	Soil		11/1/2017 13:15	11/2/2017 09:30	<input type="checkbox"/>
1711163-04	20171101-H2-797-WWALL (5')	Soil		11/1/2017 13:30	11/2/2017 09:30	<input type="checkbox"/>
1711163-05	20171101-H2-797-NWALL (3')	Soil		11/1/2017 13:45	11/2/2017 09:30	<input type="checkbox"/>
1711163-06	20171101-H2-797-SPOIL	Soil		11/1/2017 14:00	11/2/2017 09:30	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC
Project: H2-797
Work Order: 1711163

Case Narrative

Batch 110036, Method GRO_8015_S, Sample 1711163-01A: GRO surrogate recovery high due to matrix interference.

Batch 110049, Method CR6_7196_S, Sample 1711163-06A MS/MSD: The MS/MSD recovery was below the lower control limit for Hexavalent Chromium. The corresponding result in the parent sample may be biased low.

Batch 110083, Method PNLVI_8270_S, Sample 1711163-01A MS/MSD: The MS/MSD recovery was above the upper control limit for Naphthalene. The corresponding result in the parent sample may be biased high.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-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
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 Reporting Limit, 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	Milligrams per Kilogram
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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-Bottom (6')

Lab ID: 1711163-01

Collection Date: 11/1/2017 11:45 AM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	2,300		30	mg/Kg-dry	5	Analyst: KB 11/7/2017 10:04 AM
Surr: 4-Terphenyl-d14	92.6		34-130	%REC	5	11/7/2017 10:04 AM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	8,300		73	mg/Kg	10	Analyst: KB 11/7/2017 06:58 AM
Surr: Toluene-d8	147	S	71-123	%REC	10	11/7/2017 06:58 AM
MERCURY BY CVAA						
Mercury	0.42		0.043	mg/Kg-dry	2	Analyst: RSH 11/7/2017 03:15 PM
METALS ANALYSIS BY ICP						
Arsenic	9.2		0.49	mg/Kg-dry	1	Analyst: RH 11/6/2017 03:04 AM
Barium	650		0.49	mg/Kg-dry	1	11/6/2017 03:04 AM
Cadmium	ND		0.97	mg/Kg-dry	1	11/6/2017 03:04 AM
Chromium	37		0.49	mg/Kg-dry	1	11/6/2017 03:04 AM
Copper	17		0.97	mg/Kg-dry	1	11/6/2017 03:04 AM
Lead	10		0.49	mg/Kg-dry	1	11/6/2017 03:04 AM
Nickel	19		0.49	mg/Kg-dry	1	11/6/2017 03:04 AM
Selenium	2.1		0.97	mg/Kg-dry	1	11/6/2017 03:04 AM
Silver	ND		0.49	mg/Kg-dry	1	11/6/2017 03:04 AM
Zinc	57		0.97	mg/Kg-dry	1	11/6/2017 03:04 AM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	35		0.010	none	1	Analyst: RH 11/6/2017 10:21
SOLUBLE CATIONS FOR SAR						
Calcium	150		5.0	mg/L	10	Analyst: JF 11/6/2017 03:16 PM
Magnesium	12		2.0	mg/L	10	11/6/2017 03:16 PM
Sodium	1,600		2.0	mg/L	10	11/6/2017 03:16 PM
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		0.050	mg/Kg-dry	1	Analyst: RM 11/6/2017 03:21 PM
Anthracene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Benzo(a)anthracene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Benzo(a)pyrene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Benzo(b)fluoranthene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Benzo(k)fluoranthene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Chrysene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Dibenzo(a,h)anthracene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Fluoranthene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-Bottom (6')

Lab ID: 1711163-01

Collection Date: 11/1/2017 11:45 AM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.46		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Indeno(1,2,3-cd)pyrene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Naphthalene	10		0.50	mg/Kg-dry	10	11/6/2017 08:07 PM
Pyrene	ND		0.050	mg/Kg-dry	1	11/6/2017 03:21 PM
Surr: 2-Fluorobiphenyl	42.4		20-140	%REC	1	11/6/2017 03:21 PM
Surr: 4-Terphenyl-d14	43.9		22-172	%REC	1	11/6/2017 03:21 PM
Surr: Nitrobenzene-d5	64.2		28-140	%REC	1	11/6/2017 03:21 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 11/3/17 10:49		Analyst: LSY
Benzene	3.6		2.2	mg/Kg	50	11/7/2017 02:32 PM
Ethylbenzene	40		2.2	mg/Kg	50	11/7/2017 02:32 PM
m,p-Xylene	700		8.8	mg/Kg	100	11/7/2017 04:05 PM
o-Xylene	120		2.2	mg/Kg	50	11/7/2017 02:32 PM
Toluene	110		2.2	mg/Kg	50	11/7/2017 02:32 PM
Xylenes, Total	810		13	mg/Kg	100	11/7/2017 04:05 PM
Surr: 1,2-Dichloroethane-d4	98.4		70-130	%REC	50	11/7/2017 02:32 PM
Surr: 1,2-Dichloroethane-d4	99.4		70-130	%REC	100	11/7/2017 04:05 PM
Surr: 4-Bromofluorobenzene	98.5		70-130	%REC	100	11/7/2017 04:05 PM
Surr: 4-Bromofluorobenzene	104		70-130	%REC	50	11/7/2017 02:32 PM
Surr: Dibromofluoromethane	96.6		70-130	%REC	50	11/7/2017 02:32 PM
Surr: Dibromofluoromethane	95.4		70-130	%REC	100	11/7/2017 04:05 PM
Surr: Toluene-d8	99.2		70-130	%REC	100	11/7/2017 04:05 PM
Surr: Toluene-d8	103		70-130	%REC	50	11/7/2017 02:32 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B 11/6/17 10:21		Analyst: JB
Electrical Conductivity @ Saturation	9.6		0.10	mmhos/cm @2	20	11/6/2017 03:10 PM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JJG
Chromium, Trivalent	37		1.2	mg/Kg-dry	1	11/7/2017 04:46 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A 11/3/17 16:24		Analyst: RP
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	11/6/2017 05:00 PM
MOISTURE			SW3550C			Analyst: MT
Moisture	19		0.050	% of sample	1	11/6/2017 03:11 PM
PH			SW9045D	Prep: EXTRACT 11/6/17 15:41		Analyst: RZM
pH	8.74		0.100	s.u.	1	11/6/2017 03:41 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-SWALL (5')

Lab ID: 1711163-02

Collection Date: 11/1/2017 01:00 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	24		SW8015C		Prep: SW3546 11/6/17 12:16	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	<i>74.1</i>		<i>34-130</i>	<i>%REC</i>	<i>1</i>	11/6/2017 03:42 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	91		SW8015D		Prep: SW5035 11/3/17 10:54	Analyst: KB
<i>Surr: Toluene-d8</i>	<i>102</i>		<i>71-123</i>	<i>%REC</i>	<i>1</i>	11/4/2017 12:15 PM
MERCURY BY CVAA						
Mercury	ND		SW7471B		Prep: SW7471 11/6/17 16:38	Analyst: RSH
			0.019	mg/Kg-dry	1	11/6/2017 05:38 PM
METALS ANALYSIS BY ICP						
Arsenic	8.1		SW846 6010C		Prep: SW3050B 11/3/17 12:00	Analyst: RH
Barium	280		0.47	mg/Kg-dry	1	11/6/2017 03:09 AM
Cadmium	ND		0.47	mg/Kg-dry	1	11/6/2017 03:09 AM
Chromium	40		0.95	mg/Kg-dry	1	11/6/2017 03:09 AM
Copper	12		0.47	mg/Kg-dry	1	11/6/2017 03:09 AM
Lead	10		0.95	mg/Kg-dry	1	11/6/2017 03:09 AM
Nickel	21		0.47	mg/Kg-dry	1	11/6/2017 03:09 AM
Selenium	1.9		0.47	mg/Kg-dry	1	11/6/2017 03:09 AM
Silver	ND		0.95	mg/Kg-dry	1	11/6/2017 03:09 AM
Zinc	64		0.47	mg/Kg-dry	1	11/6/2017 03:09 AM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	3.1		USDA H60 MET		Prep: USDA Method 20B 11/6/17 10:21	Analyst: RH
			0.010	none	1	11/6/2017
SOLUBLE CATIONS FOR SAR						
Calcium	490		SW6020A		Prep: USDA Method 20B 11/6/17 10:21	Analyst: JF
Magnesium	32		5.0	mg/L	10	11/6/2017 03:17 PM
Sodium	260		2.0	mg/L	10	11/6/2017 03:17 PM
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep: SW3546 11/6/17 12:16	Analyst: RM
Anthracene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Benzo(a)anthracene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Benzo(a)pyrene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Benzo(b)fluoranthene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Benzo(k)fluoranthene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Chrysene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Dibenzo(a,h)anthracene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Fluoranthene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-SWALL (5')

Lab ID: 1711163-02

Collection Date: 11/1/2017 01:00 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Indeno(1,2,3-cd)pyrene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Naphthalene	0.39		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Pyrene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:18 PM
Surr: 2-Fluorobiphenyl	101		20-140	%REC	1	11/6/2017 04:18 PM
Surr: 4-Terphenyl-d14	114		22-172	%REC	1	11/6/2017 04:18 PM
Surr: Nitrobenzene-d5	80.3		28-140	%REC	1	11/6/2017 04:18 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035	11/3/17 10:49	Analyst: LSY
Benzene	0.68		0.041	mg/Kg	1	11/7/2017 01:44 PM
Ethylbenzene	1.1		0.041	mg/Kg	1	11/7/2017 01:44 PM
m,p-Xylene	17		0.41	mg/Kg	5	11/7/2017 04:52 PM
o-Xylene	3.1		0.041	mg/Kg	1	11/7/2017 01:44 PM
Toluene	6.2		0.041	mg/Kg	1	11/7/2017 01:44 PM
Xylenes, Total	20		0.61	mg/Kg	5	11/7/2017 04:52 PM
Surr: 1,2-Dichloroethane-d4	99.0		70-130	%REC	1	11/7/2017 01:44 PM
Surr: 1,2-Dichloroethane-d4	98.1		70-130	%REC	5	11/7/2017 04:52 PM
Surr: 4-Bromofluorobenzene	97.4		70-130	%REC	5	11/7/2017 04:52 PM
Surr: 4-Bromofluorobenzene	105		70-130	%REC	1	11/7/2017 01:44 PM
Surr: Dibromofluoromethane	90.6		70-130	%REC	1	11/7/2017 01:44 PM
Surr: Dibromofluoromethane	93.3		70-130	%REC	5	11/7/2017 04:52 PM
Surr: Toluene-d8	99.6		70-130	%REC	5	11/7/2017 04:52 PM
Surr: Toluene-d8	105		70-130	%REC	1	11/7/2017 01:44 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B	11/6/17 10:21	Analyst: JB
Electrical Conductivity @ Saturation	4.8		0.10	mmhos/cm @2	20	11/6/2017 03:10 PM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JJG
Chromium, Trivalent	40		1.2	mg/Kg-dry	1	11/7/2017 04:46 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A	11/3/17 16:24	Analyst: RP
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	11/6/2017 05:00 PM
MOISTURE			SW3550C			Analyst: MT
Moisture	15		0.050	% of sample	1	11/6/2017 03:11 PM
PH			SW9045D	Prep: EXTRACT	11/6/17 15:41	Analyst: RZM
pH	8.30		0.100	s.u.	1	11/6/2017 03:41 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-EWALL (4')

Lab ID: 1711163-03

Collection Date: 11/1/2017 01:15 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	48		SW8015C		Prep: SW3546 11/6/17 12:16	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	<i>84.1</i>		<i>5.8</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 07:05 PM
			<i>34-130</i>	<i>%REC</i>	<i>1</i>	11/6/2017 07:05 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	130		SW8015D		Prep: SW5035 11/3/17 10:54	Analyst: KB
<i>Surr: Toluene-d8</i>	<i>103</i>		<i>6.8</i>	<i>mg/Kg</i>	<i>1</i>	11/4/2017 12:44 PM
			<i>71-123</i>	<i>%REC</i>	<i>1</i>	11/4/2017 12:44 PM
MERCURY BY CVAA						
Mercury	ND		SW7471B		Prep: SW7471 11/6/17 16:38	Analyst: RSH
			<i>0.022</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 05:41 PM
METALS ANALYSIS BY ICP						
Arsenic	14		SW846 6010C		Prep: SW3050B 11/3/17 12:00	Analyst: RH
Barium	410		<i>0.45</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Cadmium	ND		<i>0.45</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Chromium	36		<i>0.90</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Copper	22		<i>0.45</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Lead	15		<i>0.90</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Nickel	17		<i>0.45</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Selenium	2.1		<i>0.45</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Silver	ND		<i>0.90</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 03:14 AM
Zinc	67					11/6/2017 03:14 AM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	1.2		USDA H60 MET		Prep: USDA Method 20B 11/6/17 10:21	Analyst: RH
			<i>0.010</i>	<i>none</i>	<i>1</i>	11/6/2017
SOLUBLE CATIONS FOR SAR						
Calcium	1,700		SW6020A		Prep: USDA Method 20B 11/6/17 10:21	Analyst: JF
Magnesium	46		<i>5.0</i>	<i>mg/L</i>	<i>10</i>	11/6/2017 03:19 PM
Sodium	180		<i>2.0</i>	<i>mg/L</i>	<i>10</i>	11/6/2017 03:19 PM
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep: SW3546 11/6/17 12:16	Analyst: RM
Anthracene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Benzo(a)anthracene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Benzo(a)pyrene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Benzo(b)fluoranthene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Benzo(k)fluoranthene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Chrysene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Dibenzo(a,h)anthracene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM
Fluoranthene	ND		<i>0.049</i>	<i>mg/Kg-dry</i>	<i>1</i>	11/6/2017 04:32 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-EWALL (4')

Lab ID: 1711163-03

Collection Date: 11/1/2017 01:15 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:32 PM
Indeno(1,2,3-cd)pyrene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:32 PM
Naphthalene	0.81		0.049	mg/Kg-dry	1	11/6/2017 04:32 PM
Pyrene	ND		0.049	mg/Kg-dry	1	11/6/2017 04:32 PM
Surr: 2-Fluorobiphenyl	105		20-140	%REC	1	11/6/2017 04:32 PM
Surr: 4-Terphenyl-d14	119		22-172	%REC	1	11/6/2017 04:32 PM
Surr: Nitrobenzene-d5	94.3		28-140	%REC	1	11/6/2017 04:32 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035	11/3/17 10:49	Analyst: AK
Benzene	0.099		0.041	mg/Kg	1	11/6/2017 01:55 PM
Ethylbenzene	0.68		0.041	mg/Kg	1	11/6/2017 01:55 PM
m,p-Xylene	13		0.081	mg/Kg	1	11/6/2017 01:55 PM
o-Xylene	2.3		0.041	mg/Kg	1	11/6/2017 01:55 PM
Toluene	1.9		0.041	mg/Kg	1	11/6/2017 01:55 PM
Xylenes, Total	15		0.12	mg/Kg	1	11/6/2017 01:55 PM
Surr: 1,2-Dichloroethane-d4	97.5		70-130	%REC	1	11/6/2017 01:55 PM
Surr: 4-Bromofluorobenzene	98.8		70-130	%REC	1	11/6/2017 01:55 PM
Surr: Dibromofluoromethane	95.0		70-130	%REC	1	11/6/2017 01:55 PM
Surr: Toluene-d8	103		70-130	%REC	1	11/6/2017 01:55 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B	11/6/17 10:21	Analyst: JB
Electrical Conductivity @ Saturation	10		0.10	mmhos/cm @2	20	11/6/2017 03:10 PM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JJG
Chromium, Trivalent	36		1.2	mg/Kg-dry	1	11/7/2017 04:46 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A	11/3/17 16:24	Analyst: RP
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	11/6/2017 05:00 PM
MOISTURE			SW3550C			Analyst: MT
Moisture	15		0.050	% of sample	1	11/6/2017 03:11 PM
PH			SW9045D	Prep: EXTRACT	11/6/17 15:41	Analyst: RZM
pH	8.09		0.100	s.u.	1	11/6/2017 03:41 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-WWALL (5')

Lab ID: 1711163-04

Collection Date: 11/1/2017 01:30 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	11		SW8015C		Prep: SW3546 11/6/17 12:16	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	72.6		5.7	mg/Kg-dry	1	11/6/2017 07:34 PM
			34-130	%REC	1	11/6/2017 07:34 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	16		SW8015D		Prep: SW5035 11/3/17 10:54	Analyst: KB
<i>Surr: Toluene-d8</i>	94.4		6.5	mg/Kg	1	11/4/2017 01:43 PM
			71-123	%REC	1	11/4/2017 01:43 PM
MERCURY BY CVAA						
Mercury	ND		SW7471B		Prep: SW7471 11/6/17 16:38	Analyst: RSH
			0.020	mg/Kg-dry	1	11/6/2017 05:44 PM
METALS ANALYSIS BY ICP						
Arsenic	8.2		SW846 6010C		Prep: SW3050B 11/3/17 12:00	Analyst: RH
Barium	230		0.41	mg/Kg-dry	1	11/6/2017 03:19 AM
Cadmium	ND		0.41	mg/Kg-dry	1	11/6/2017 03:19 AM
Chromium	49		0.81	mg/Kg-dry	1	11/6/2017 03:19 AM
Copper	12		0.41	mg/Kg-dry	1	11/6/2017 03:19 AM
Lead	9.2		0.81	mg/Kg-dry	1	11/6/2017 03:19 AM
Nickel	24		0.41	mg/Kg-dry	1	11/6/2017 03:19 AM
Selenium	1.7		0.81	mg/Kg-dry	1	11/6/2017 03:19 AM
Silver	ND		0.41	mg/Kg-dry	1	11/6/2017 03:19 AM
Zinc	59		0.81	mg/Kg-dry	1	11/6/2017 03:19 AM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	2.5		USDA H60 MET		Prep: USDA Method 20B 11/6/17 10:21	Analyst: RH
			0.010	none	1	11/6/2017
SOLUBLE CATIONS FOR SAR						
Calcium	160		SW6020A		Prep: USDA Method 20B 11/6/17 10:21	Analyst: JF
Magnesium	13		5.0	mg/L	10	11/6/2017 03:25 PM
Sodium	120		2.0	mg/L	10	11/6/2017 03:25 PM
			2.0	mg/L	10	11/6/2017 03:25 PM
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep: SW3546 11/6/17 12:16	Analyst: RM
Anthracene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Benzo(a)anthracene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Benzo(a)pyrene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Benzo(b)fluoranthene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Benzo(k)fluoranthene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Chrysene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Dibenzo(a,h)anthracene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Fluoranthene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-WWALL (5')

Lab ID: 1711163-04

Collection Date: 11/1/2017 01:30 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Indeno(1,2,3-cd)pyrene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Naphthalene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Pyrene	ND		0.048	mg/Kg-dry	1	11/6/2017 04:47 PM
Surr: 2-Fluorobiphenyl	97.3		20-140	%REC	1	11/6/2017 04:47 PM
Surr: 4-Terphenyl-d14	108		22-172	%REC	1	11/6/2017 04:47 PM
Surr: Nitrobenzene-d5	88.4		28-140	%REC	1	11/6/2017 04:47 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035	11/3/17 10:49	Analyst: AK
Benzene	0.051		0.039	mg/Kg	1	11/6/2017 02:10 PM
Ethylbenzene	0.12		0.039	mg/Kg	1	11/6/2017 02:10 PM
m,p-Xylene	2.3		0.078	mg/Kg	1	11/6/2017 02:10 PM
o-Xylene	0.37		0.039	mg/Kg	1	11/6/2017 02:10 PM
Toluene	0.65		0.039	mg/Kg	1	11/6/2017 02:10 PM
Xylenes, Total	2.7		0.12	mg/Kg	1	11/6/2017 02:10 PM
Surr: 1,2-Dichloroethane-d4	96.7		70-130	%REC	1	11/6/2017 02:10 PM
Surr: 4-Bromofluorobenzene	100		70-130	%REC	1	11/6/2017 02:10 PM
Surr: Dibromofluoromethane	95.0		70-130	%REC	1	11/6/2017 02:10 PM
Surr: Toluene-d8	100		70-130	%REC	1	11/6/2017 02:10 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B	11/6/17 10:21	Analyst: JB
Electrical Conductivity @ Saturation	1.6		0.10	mmhos/cm @2	20	11/6/2017 03:10 PM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JJG
Chromium, Trivalent	49		1.2	mg/Kg-dry	1	11/7/2017 04:46 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A	11/3/17 16:24	Analyst: RP
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	11/6/2017 05:00 PM
MOISTURE			SW3550C			Analyst: MT
Moisture	13		0.050	% of sample	1	11/6/2017 03:11 PM
PH			SW9045D	Prep: EXTRACT	11/6/17 15:41	Analyst: RZM
pH	8.71		0.100	s.u.	1	11/6/2017 03:41 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-NWALL (3')

Lab ID: 1711163-05

Collection Date: 11/1/2017 01:45 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	56		SW8015C		Prep: SW3546 11/6/17 12:16	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	76.1		6.2	mg/Kg-dry	1	11/6/2017 08:32 PM
			34-130	%REC	1	11/6/2017 08:32 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	8.8		SW8015D		Prep: SW5035 11/3/17 10:54	Analyst: KB
<i>Surr: Toluene-d8</i>	96.0		7.7	mg/Kg	1	11/4/2017 02:12 PM
			71-123	%REC	1	11/4/2017 02:12 PM
MERCURY BY CVAA						
Mercury	ND		SW7471B		Prep: SW7471 11/6/17 16:38	Analyst: RSH
			0.024	mg/Kg-dry	1	11/6/2017 05:46 PM
METALS ANALYSIS BY ICP						
Arsenic	10		SW846 6010C		Prep: SW3050B 11/3/17 12:00	Analyst: RH
Barium	330		0.50	mg/Kg-dry	1	11/6/2017 03:24 AM
Cadmium	ND		0.50	mg/Kg-dry	1	11/6/2017 03:24 AM
Chromium	46		1.0	mg/Kg-dry	1	11/6/2017 03:24 AM
Copper	17		0.50	mg/Kg-dry	1	11/6/2017 03:24 AM
Lead	13		1.0	mg/Kg-dry	1	11/6/2017 03:24 AM
Nickel	23		0.50	mg/Kg-dry	1	11/6/2017 03:24 AM
Selenium	1.7		0.50	mg/Kg-dry	1	11/6/2017 03:24 AM
Silver	ND		1.0	mg/Kg-dry	1	11/6/2017 03:24 AM
Zinc	73		0.50	mg/Kg-dry	1	11/6/2017 03:24 AM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	2.3		USDA H60 MET		Prep: USDA Method 20B 11/6/17 10:21	Analyst: RH
			0.010	none	1	11/6/2017
SOLUBLE CATIONS FOR SAR						
Calcium	330		SW6020A		Prep: USDA Method 20B 11/6/17 10:21	Analyst: JF
Magnesium	20		5.0	mg/L	10	11/6/2017 03:26 PM
Sodium	160		2.0	mg/L	10	11/6/2017 03:26 PM
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep: SW3546 11/6/17 12:16	Analyst: RM
Anthracene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Benzo(a)anthracene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Benzo(a)pyrene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Benzo(b)fluoranthene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Benzo(k)fluoranthene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Chrysene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Dibenzo(a,h)anthracene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Fluoranthene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC

Project: H2-797

Work Order: 1711163

Sample ID: 20171101-H2-797-NWALL (3')

Lab ID: 1711163-05

Collection Date: 11/1/2017 01:45 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Indeno(1,2,3-cd)pyrene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Naphthalene	0.38		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Pyrene	ND		0.052	mg/Kg-dry	1	11/6/2017 05:01 PM
Surr: 2-Fluorobiphenyl	93.3		20-140	%REC	1	11/6/2017 05:01 PM
Surr: 4-Terphenyl-d14	111		22-172	%REC	1	11/6/2017 05:01 PM
Surr: Nitrobenzene-d5	95.7		28-140	%REC	1	11/6/2017 05:01 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035	11/3/17 10:49	Analyst: AK
Benzene	0.048		0.046	mg/Kg	1	11/6/2017 02:28 PM
Ethylbenzene	0.082		0.046	mg/Kg	1	11/6/2017 02:28 PM
m,p-Xylene	1.5		0.092	mg/Kg	1	11/6/2017 02:28 PM
o-Xylene	0.29		0.046	mg/Kg	1	11/6/2017 02:28 PM
Toluene	0.41		0.046	mg/Kg	1	11/6/2017 02:28 PM
Xylenes, Total	1.8		0.14	mg/Kg	1	11/6/2017 02:28 PM
Surr: 1,2-Dichloroethane-d4	97.6		70-130	%REC	1	11/6/2017 02:28 PM
Surr: 4-Bromofluorobenzene	101		70-130	%REC	1	11/6/2017 02:28 PM
Surr: Dibromofluoromethane	94.8		70-130	%REC	1	11/6/2017 02:28 PM
Surr: Toluene-d8	100		70-130	%REC	1	11/6/2017 02:28 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B	11/6/17 10:21	Analyst: JB
Electrical Conductivity @ Saturation	3.0		0.10	mmhos/cm @2	20	11/6/2017 03:10 PM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JJG
Chromium, Trivalent	46		1.3	mg/Kg-dry	1	11/7/2017 04:46 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A	11/3/17 16:24	Analyst: RP
Chromium, Hexavalent	ND		1.3	mg/Kg-dry	1	11/6/2017 05:00 PM
MOISTURE			SW3550C			Analyst: MT
Moisture	21		0.050	% of sample	1	11/6/2017 03:11 PM
PH			SW9045D	Prep: EXTRACT	11/6/17 15:41	Analyst: RZM
pH	8.31		0.100	s.u.	1	11/6/2017 03:41 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC
Project: H2-797
Sample ID: 20171101-H2-797-SPOIL
Collection Date: 11/1/2017 02:00 PM

Work Order: 1711163
Lab ID: 1711163-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 11/6/17 12:16	Analyst: KB
DRO (C10-C28)	340		5.6	mg/Kg-dry	1	11/6/2017 09:01 PM
<i>Surr: 4-Terphenyl-d14</i>	78.6		34-130	%REC	1	11/6/2017 09:01 PM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 11/3/17 10:54	Analyst: KB
GRO (C6-C10)	210		6.4	mg/Kg	1	11/4/2017 02:42 PM
<i>Surr: Toluene-d8</i>	111		71-123	%REC	1	11/4/2017 02:42 PM
MERCURY BY CVAA						
			SW7471B		Prep: SW7471 11/6/17 16:38	Analyst: RSH
Mercury	0.024		0.020	mg/Kg-dry	1	11/6/2017 05:56 PM
METALS ANALYSIS BY ICP						
			SW846 6010C		Prep: SW3050B 11/3/17 12:00	Analyst: RH
Arsenic	9.7		0.41	mg/Kg-dry	1	11/6/2017 03:30 AM
Barium	420		0.41	mg/Kg-dry	1	11/6/2017 03:30 AM
Cadmium	ND		0.82	mg/Kg-dry	1	11/6/2017 03:30 AM
Chromium	42		0.41	mg/Kg-dry	1	11/6/2017 03:30 AM
Copper	17		0.82	mg/Kg-dry	1	11/6/2017 03:30 AM
Lead	11		0.41	mg/Kg-dry	1	11/6/2017 03:30 AM
Nickel	20		0.41	mg/Kg-dry	1	11/6/2017 03:30 AM
Selenium	2.1		0.82	mg/Kg-dry	1	11/6/2017 03:30 AM
Silver	ND		0.41	mg/Kg-dry	1	11/6/2017 03:30 AM
Zinc	71		0.82	mg/Kg-dry	1	11/6/2017 03:30 AM
SODIUM ADSORPTION RATIO						
			USDA H60 MET		Prep: USDA Method 20B 11/6/17 10:21	Analyst: RH
Sodium Adsorption Ratio	4.1		0.010	none	1	11/6/2017
SOLUBLE CATIONS FOR SAR						
			SW6020A		Prep: USDA Method 20B 11/6/17 10:21	Analyst: JF
Calcium	500		5.0	mg/L	10	11/6/2017 03:28 PM
Magnesium	38		2.0	mg/L	10	11/6/2017 03:28 PM
Sodium	350		2.0	mg/L	10	11/6/2017 03:28 PM
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW846 8270D		Prep: SW3546 11/6/17 12:16	Analyst: RM
Acenaphthene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Anthracene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Benzo(a)anthracene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Benzo(a)pyrene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Benzo(b)fluoranthene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Benzo(k)fluoranthene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Chrysene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Dibenzo(a,h)anthracene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Fluoranthene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM

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

ALS Group, USA

Date: 08-Nov-17

Client: Caerus Oil and Gas LLC
Project: H2-797
Sample ID: 20171101-H2-797-SPOIL
Collection Date: 11/1/2017 02:00 PM

Work Order: 1711163
Lab ID: 1711163-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.090		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Indeno(1,2,3-cd)pyrene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Naphthalene	1.7		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Pyrene	ND		0.047	mg/Kg-dry	1	11/6/2017 05:15 PM
Surr: 2-Fluorobiphenyl	96.7		20-140	%REC	1	11/6/2017 05:15 PM
Surr: 4-Terphenyl-d14	111		22-172	%REC	1	11/6/2017 05:15 PM
Surr: Nitrobenzene-d5	111		28-140	%REC	1	11/6/2017 05:15 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 11/3/17 10:49	Analyst: LSY	
Benzene	0.82		0.076	mg/Kg	2	11/7/2017 02:00 PM
Ethylbenzene	2.3		0.076	mg/Kg	2	11/7/2017 02:00 PM
m,p-Xylene	41		1.5	mg/Kg	20	11/7/2017 04:20 PM
o-Xylene	7.2		0.076	mg/Kg	2	11/7/2017 02:00 PM
Toluene	8.9		0.076	mg/Kg	2	11/7/2017 02:00 PM
Xylenes, Total	48		2.3	mg/Kg	20	11/7/2017 04:20 PM
Surr: 1,2-Dichloroethane-d4	98.2		70-130	%REC	2	11/7/2017 02:00 PM
Surr: 1,2-Dichloroethane-d4	99.4		70-130	%REC	20	11/7/2017 04:20 PM
Surr: 4-Bromofluorobenzene	98.8		70-130	%REC	20	11/7/2017 04:20 PM
Surr: 4-Bromofluorobenzene	102		70-130	%REC	2	11/7/2017 02:00 PM
Surr: Dibromofluoromethane	93.3		70-130	%REC	2	11/7/2017 02:00 PM
Surr: Dibromofluoromethane	95.2		70-130	%REC	20	11/7/2017 04:20 PM
Surr: Toluene-d8	98.9		70-130	%REC	20	11/7/2017 04:20 PM
Surr: Toluene-d8	109		70-130	%REC	2	11/7/2017 02:00 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B 11/6/17 10:21	Analyst: JB	
Electrical Conductivity @ Saturation	5.1		0.10	mmhos/cm @2	20	11/6/2017 03:10 PM
CHROMIUM, TRIVALENT			CALCULATION	Analyst: JJG		
Chromium, Trivalent	42		1.1	mg/Kg-dry	1	11/7/2017 04:46 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A 11/3/17 16:24	Analyst: RP	
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	11/6/2017 05:00 PM
MOISTURE			SW3550C	Analyst: MT		
Moisture	12		0.050	% of sample	1	11/6/2017 03:11 PM
PH			SW9045D	Prep: EXTRACT 11/6/17 15:41	Analyst: RZM	
pH	8.21		0.100	s.u.	1	11/6/2017 03:41 PM

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110084** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-110084-110084				Units: mg/Kg		Analysis Date: 11/6/2017 02:44 PM		
Client ID:		Run ID: GC8_171106A				SeqNo: 4745387		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	5.0								
Surr: 4-Terphenyl-d14	2.3	0	3.33	0	69.1	34-130	0			

LCS		Sample ID: DLCSS1-110084-110084				Units: mg/Kg		Analysis Date: 11/6/2017 03:13 PM		
Client ID:		Run ID: GC8_171106A				SeqNo: 4745388		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	324.6	5.0	333	0	97.5	65-122	0			
Surr: 4-Terphenyl-d14	2.4	0	3.33	0	72.1	34-130	0			

MS		Sample ID: 1711163-02A MS				Units: mg/Kg		Analysis Date: 11/6/2017 04:11 PM		
Client ID: 20171101-H2-797-SWALL (5')		Run ID: GC8_171106A				SeqNo: 4745390		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	325.8	4.9	324.4	20.61	94.1	65-122	0			
Surr: 4-Terphenyl-d14	2.517	0	3.244	0	77.6	34-130	0			

MSD		Sample ID: 1711163-02A MSD				Units: mg/Kg		Analysis Date: 11/6/2017 04:40 PM		
Client ID: 20171101-H2-797-SWALL (5')		Run ID: GC8_171106A				SeqNo: 4745391		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	370.6	5.0	332.1	20.61	105	65-122	325.8	12.9	30	
Surr: 4-Terphenyl-d14	2.659	0	3.321	0	80.1	34-130	2.517	5.5	30	

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110036** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-110036-110036				Units: µg/Kg-dry		Analysis Date: 11/4/2017 03:54 AM		
Client ID:		Run ID: GC9_171103B				SeqNo: 4741265		Prep Date: 11/3/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
<i>Surr: Toluene-d8</i>	<i>4830</i>	<i>0</i>	<i>5000</i>	<i>0</i>	<i>96.6</i>	<i>71-123</i>	<i>0</i>			

LCS		Sample ID: LCS-110036-110036				Units: µg/Kg-dry		Analysis Date: 11/4/2017 02:26 AM		
Client ID:		Run ID: GC9_171103B				SeqNo: 4741263		Prep Date: 11/3/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	446100	5,000	500000	0	89.2	71-123	0			
<i>Surr: Toluene-d8</i>	<i>5712</i>	<i>0</i>	<i>5000</i>	<i>0</i>	<i>114</i>	<i>71-123</i>	<i>0</i>			

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110144** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-110144-110144				Units: mg/Kg		Analysis Date: 11/6/2017 04:58 PM		
Client ID:		Run ID: HG1_171106A				SeqNo: 4743844		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury ND 0.020

LCS		Sample ID: LCS-110144-110144				Units: mg/Kg		Analysis Date: 11/6/2017 05:00 PM		
Client ID:		Run ID: HG1_171106A				SeqNo: 4743845		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1742 0.020 0.1665 0 105 80-120 0

MS		Sample ID: 17102049-02BMS				Units: mg/Kg		Analysis Date: 11/6/2017 05:08 PM		
Client ID:		Run ID: HG1_171106A				SeqNo: 4743848		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1361 0.016 0.1308 0.002045 103 75-125 0

MSD		Sample ID: 17102049-02BMSD				Units: mg/Kg		Analysis Date: 11/6/2017 05:10 PM		
Client ID:		Run ID: HG1_171106A				SeqNo: 4743849		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1312 0.016 0.1304 0.002045 99 75-125 0.1361 3.68 35

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110032** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK				Sample ID: MBLK-110032-110032			Units: mg/Kg		Analysis Date: 11/6/2017 02:53 AM		
Client ID:			Run ID: ICP2_171105A			SeqNo: 4742398		Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	ND	0.25									
Barium	ND	0.25									
Cadmium	0.1345	0.50								J	
Chromium	0.089	0.25								J	
Copper	ND	0.50									
Lead	ND	0.25									
Nickel	ND	0.25									
Selenium	ND	0.50									
Silver	ND	0.25									
Zinc	ND	0.50									

LCS				Sample ID: LCS-110032-110032				Units: mg/Kg			Analysis Date: 11/6/2017 02:59 AM		
Client ID:			Run ID: ICP2_171105A				SeqNo: 4742399			Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Arsenic	4.95	0.25	5	0	99	80-120	0						
Barium	4.89	0.25	5	0	97.8	80-120	0						
Cadmium	5.099	0.50	5	0	102	80-120	0						
Chromium	5.23	0.25	5	0	105	80-120	0						
Copper	4.755	0.50	5	0	95.1	80-120	0						
Lead	4.755	0.25	5	0	95.1	80-120	0						
Nickel	4.94	0.25	5	0	98.8	80-120	0						
Selenium	4.485	0.50	5	0	89.7	80-120	0						
Silver	4.99	0.25	5	0	99.8	80-120	0						
Zinc	5.297	0.50	5	0	106	80-120	0						

MS				Sample ID: 1711166-01BMS			Units: mg/Kg		Analysis Date: 11/6/2017 03:55 AM		
Client ID:			Run ID: ICP2_171105A			SeqNo: 4742410		Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	26.41	0.37	7.452	15.69	144	75-125	0			S	
Barium	89.31	0.37	7.452	72.23	229	75-125	0			SO	
Cadmium	8.769	0.75	7.452	1	104	75-125	0				
Chromium	17.67	0.37	7.452	9.05	116	75-125	0				
Copper	53.46	0.75	7.452	45.57	106	75-125	0			O	
Lead	142.7	0.37	7.452	155.2	-168	75-125	0			SO	
Nickel	16.86	0.37	7.452	8.108	117	75-125	0				
Selenium	7.711	0.75	7.452	1.157	88	75-125	0				
Silver	7.116	0.37	7.452	-0.03224	95.9	75-125	0				
Zinc	229.3	0.75	7.452	216.9	166	75-125	0			SO	

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110032** Instrument ID **ICP2** Method: **SW846 6010C**

MSD				Sample ID: 1711166-01BMSD			Units: mg/Kg		Analysis Date: 11/6/2017 04:00 AM		
Client ID:			Run ID: ICP2_171105A			SeqNo: 4742411		Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	20.15	0.37	7.485	15.69	59.7	75-125	26.41	26.9	20	SR	
Barium	64.66	0.37	7.485	72.23	-101	75-125	89.31	32	20	SRO	
Cadmium	8.647	0.75	7.485	1	102	75-125	8.769	1.4	20		
Chromium	15.5	0.37	7.485	9.05	86.2	75-125	17.67	13.1	20		
Copper	35.61	0.75	7.485	45.57	-133	75-125	53.46	40.1	20	SRO	
Lead	144.3	0.37	7.485	155.2	-146	75-125	142.7	1.09	20	SO	
Nickel	14.51	0.37	7.485	8.108	85.6	75-125	16.86	15	20		
Selenium	7.948	0.75	7.485	1.157	90.7	75-125	7.711	3.03	20		
Silver	7.178	0.37	7.485	-0.03224	96.3	75-125	7.116	0.866	20		
Zinc	188	0.75	7.485	216.9	-386	75-125	229.3	19.8	20	SO	

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110104** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP		Sample ID: 17102053-05ADUP				Units: none		Analysis Date: 11/6/2017		
Client ID:		Run ID: SAR_171106A				SeqNo: 4744897		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	0.478	0.010	0	0	0		0.4567	4.56	50	

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

Batch ID: **110104** Instrument ID **ICPMS3** Method: **SW6020A**

DUP		Sample ID: 17102053-05ADUP				Units: mg/L		Analysis Date: 11/6/2017 03:11 PM		
Client ID:		Run ID: ICPMS3_171106A				SeqNo: 4744026		Prep Date: 11/6/2017		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	135.1	5.0	0	0	0	0-0	117	14.3		
Magnesium	20.7	2.0	0	0	0	0-0	17.64	15.9		
Sodium	22.58	2.0	0	0	0	0-0	20.05	11.9		

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
 Work Order: 1711163
 Project: H2-797

QC BATCH REPORT

Batch ID: 110083 Instrument ID SVMS6 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-110083-110083				Units: µg/Kg		Analysis Date: 11/6/2017 02:23 PM		
Client ID:		Run ID: SVMS6_171106A				SeqNo: 4745613		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	42								
Anthracene	ND	42								
Benzo(a)anthracene	ND	42								
Benzo(a)pyrene	ND	42								
Benzo(b)fluoranthene	ND	42								
Benzo(k)fluoranthene	ND	42								
Chrysene	ND	42								
Dibenzo(a,h)anthracene	ND	42								
Fluoranthene	ND	42								
Fluorene	ND	42								
Indeno(1,2,3-cd)pyrene	ND	42								
Naphthalene	ND	42								
Pyrene	ND	42								
Surr: 2-Fluorobiphenyl	3615	0	3333	0	108	20-140	0			
Surr: 4-Terphenyl-d14	4167	0	3333	0	125	22-172	0			
Surr: Nitrobenzene-d5	3530	0	3333	0	106	28-140	0			

LCS		Sample ID: SLCSS1-110083-110083				Units: µg/Kg		Analysis Date: 11/6/2017 02:38 PM		
Client ID:		Run ID: SVMS6_171106A				SeqNo: 4745614		Prep Date: 11/6/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1299	42	1333	0	97.4	40-140	0			
Anthracene	1360	42	1333	0	102	40-140	0			
Benzo(a)anthracene	1298	42	1333	0	97.4	40-140	0			
Benzo(a)pyrene	1333	42	1333	0	100	40-140	0			
Benzo(b)fluoranthene	1478	42	1333	0	111	40-140	0			
Benzo(k)fluoranthene	1191	42	1333	0	89.3	40-140	0			
Chrysene	1313	42	1333	0	98.5	40-140	0			
Dibenzo(a,h)anthracene	883.1	42	1333	0	66.2	40-140	0			
Fluoranthene	1323	42	1333	0	99.3	40-140	0			
Fluorene	1352	42	1333	0	101	40-140	0			
Indeno(1,2,3-cd)pyrene	910.9	42	1333	0	68.3	40-140	0			
Naphthalene	1242	42	1333	0	93.2	40-140	0			
Pyrene	1276	42	1333	0	95.8	40-140	0			
Surr: 2-Fluorobiphenyl	3298	0	3333	0	99	20-140	0			
Surr: 4-Terphenyl-d14	3533	0	3333	0	106	22-172	0			
Surr: Nitrobenzene-d5	3500	0	3333	0	105	28-140	0			

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

Client: Caerus Oil and Gas LLC
 Work Order: 1711163
 Project: H2-797

QC BATCH REPORT

Batch ID: 110083 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 1711163-01A MS			Units: µg/Kg		Analysis Date: 11/6/2017 02:52 PM		
Client ID: 20171101-H2-797-Bottom (6')			Run ID: SVMS6_171106A			SeqNo: 4745615		Prep Date: 11/6/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1179	41	1317	0	89.5	40-140	0				
Anthracene	1231	41	1317	0	93.4	40-140	0				
Benzo(a)anthracene	1159	41	1317	0	88	40-140	0				
Benzo(a)pyrene	1255	41	1317	0	95.3	40-140	0				
Benzo(b)fluoranthene	1311	41	1317	0	99.5	40-140	0				
Benzo(k)fluoranthene	1119	41	1317	0	84.9	40-140	0				
Chrysene	1248	41	1317	0	94.8	40-140	0				
Dibenzo(a,h)anthracene	907	41	1317	0	68.9	40-140	0				
Fluoranthene	1442	41	1317	0	110	40-140	0				
Fluorene	2010	41	1317	368.1	125	40-140	0				
Indeno(1,2,3-cd)pyrene	873.8	41	1317	0	66.3	40-140	0				
Naphthalene	6536	41	1317	4456	158	40-140	0			S	
Pyrene	1231	41	1317	0	93.4	40-140	0				
Surr: 2-Fluorobiphenyl	3154	0	3293	0	95.8	20-140	0				
Surr: 4-Terphenyl-d14	3330	0	3293	0	101	22-172	0				
Surr: Nitrobenzene-d5	3810	0	3293	0	116	28-140	0				

MSD				Sample ID: 1711163-01A MSD				Units: µg/Kg		Analysis Date: 11/6/2017 03:06 PM	
Client ID: 20171101-H2-797-Bottom (6')			Run ID: SVMS6_171106A		SeqNo: 4745616		Prep Date: 11/6/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1112	41	1307	0	85.1	40-140	1179	5.82	30		
Anthracene	1350	41	1307	0	103	40-140	1231	9.25	30		
Benzo(a)anthracene	1334	41	1307	0	102	40-140	1159	14.1	30		
Benzo(a)pyrene	1361	41	1307	0	104	40-140	1255	8.16	30		
Benzo(b)fluoranthene	1367	41	1307	0	105	40-140	1311	4.2	30		
Benzo(k)fluoranthene	1328	41	1307	0	102	40-140	1119	17.1	30		
Chrysene	1314	41	1307	0	101	40-140	1248	5.14	30		
Dibenzo(a,h)anthracene	997.1	41	1307	0	76.3	40-140	907	9.46	30		
Fluoranthene	1594	41	1307	0	122	40-140	1442	10	30		
Fluorene	1950	41	1307	368.1	121	40-140	2010	3.04	30		
Indeno(1,2,3-cd)pyrene	960	41	1307	0	73.4	40-140	873.8	9.4	30		
Naphthalene	6595	41	1307	4456	164	40-140	6536	0.9	30	SE	
Pyrene	1347	41	1307	0	103	40-140	1231	9.05	30		
Surr: 2-Fluorobiphenyl	2917	0	3269	0	89.3	20-140	3154	7.79	0		
Surr: 4-Terphenyl-d14	3685	0	3269	0	113	22-172	3330	10.1	0		
Surr: Nitrobenzene-d5	3727	0	3269	0	114	28-140	3810	2.19	0		

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
 Work Order: 1711163
 Project: H2-797

QC BATCH REPORT

Batch ID: **110035** Instrument ID **VMS9** Method: **SW8260B**

MBLK				Sample ID: MBLK-110035-110035				Units: µg/Kg-dry			Analysis Date: 11/4/2017 06:13 AM		
Client ID:			Run ID: VMS9_171103B				SeqNo: 4740673			Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	ND	30											
Ethylbenzene	ND	30											
m,p-Xylene	ND	60											
o-Xylene	ND	30											
Toluene	ND	30											
Xylenes, Total	ND	90											
Surr: 1,2-Dichloroethane-d4	1062	0	1000	0	106	70-130	0						
Surr: 4-Bromofluorobenzene	1005	0	1000	0	100	70-130	0						
Surr: Dibromofluoromethane	950.5	0	1000	0	95	70-130	0						
Surr: Toluene-d8	940	0	1000	0	94	70-130	0						

LCS				Sample ID: LCS-110035-110035			Units: µg/Kg-dry		Analysis Date: 11/4/2017 04:37 AM		
Client ID:			Run ID: VMS9_171103B			SeqNo: 4740670		Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1026	30	1000	0	103	75-125	0				
Ethylbenzene	925	30	1000	0	92.5	75-125	0				
m,p-Xylene	1922	60	2000	0	96.1	80-125	0				
o-Xylene	944	30	1000	0	94.4	75-125	0				
Toluene	928	30	1000	0	92.8	70-125	0				
Xylenes, Total	2866	90	3000	0	95.6	75-125	0				
Surr: 1,2-Dichloroethane-d4	1038	0	1000	0	104	70-130	0				
Surr: 4-Bromofluorobenzene	1030	0	1000	0	103	70-130	0				
Surr: Dibromofluoromethane	1038	0	1000	0	104	70-130	0				
Surr: Toluene-d8	995	0	1000	0	99.5	70-130	0				

MS				Sample ID: 1711094-04A MS				Units: µg/Kg-dry		Analysis Date: 11/8/2017 04:18 AM	
Client ID:			Run ID: VMS10_171107B			SeqNo: 4747758		Prep Date: 11/3/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1011	32	1066	0	94.8	75-125	0				
Ethylbenzene	956.8	32	1066	0	89.8	75-125	0				
m,p-Xylene	1931	64	2132	0	90.6	80-125	0				
o-Xylene	968.6	32	1066	0	90.8	75-125	0				
Toluene	922.7	32	1066	0	86.6	70-125	0				
Xylenes, Total	2900	96	3198	0	90.7	75-125	0				
Surr: 1,2-Dichloroethane-d4	1035	0	1066	0	97	70-130	0				
Surr: 4-Bromofluorobenzene	1089	0	1066	0	102	70-130	0				
Surr: Dibromofluoromethane	951	0	1066	0	89.2	70-130	0				
Surr: Toluene-d8	1059	0	1066	0	99.3	70-130	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 1711163
 Project: H2-797

QC BATCH REPORT

Batch ID: **110035** Instrument ID **VMS9** Method: **SW8260B**

MSD				Sample ID: 1711094-04A MSD			Units: µg/Kg-dry		Analysis Date: 11/8/2017 04:34 AM		
Client ID:		Run ID: VMS10_171107B			SeqNo: 4747759		Prep Date: 11/3/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1106	32	1066	0	104	75-125	1011	8.96	30		
Ethylbenzene	1064	32	1066	0	99.8	75-125	956.8	10.6	30		
m,p-Xylene	2130	64	2132	0	99.9	80-125	1931	9.77	30		
o-Xylene	1057	32	1066	0	99.1	75-125	968.6	8.69	30		
Toluene	1014	32	1066	0	95.2	70-125	922.7	9.47	30		
Xylenes, Total	3186	96	3198	0	99.6	75-125	2900	9.41	30		
Surr: 1,2-Dichloroethane-d4	1048	0	1066	0	98.3	70-130	1035	1.28	30		
Surr: 4-Bromofluorobenzene	1109	0	1066	0	104	70-130	1089	1.79	30		
Surr: Dibromofluoromethane	961.1	0	1066	0	90.2	70-130	951	1.06	30		
Surr: Toluene-d8	1059	0	1066	0	99.4	70-130	1059	0.0503	30		

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110049** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-110049-110049				Units: mg/Kg		Analysis Date: 11/6/2017 05:00 PM		
Client ID:		Run ID: WETCHEM_171106I		SeqNo: 4743627		Prep Date: 11/3/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 1.0

LCS		Sample ID: LCS-110049-110049				Units: mg/Kg		Analysis Date: 11/6/2017 05:00 PM		
Client ID:		Run ID: WETCHEM_171106I		SeqNo: 4743628		Prep Date: 11/3/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.833 0.98 4.902 0 98.6 80-120 0

MS		Sample ID: 1711163-06A MS				Units: mg/Kg		Analysis Date: 11/6/2017 05:00 PM		
Client ID: 20171101-H2-797-SPOIL		Run ID: WETCHEM_171106I		SeqNo: 4743635		Prep Date: 11/3/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.63 1.0 5 0.2772 27.1 75-125 0 S

MS		Sample ID: 1711163-06A MSI				Units: mg/Kg		Analysis Date: 11/6/2017 05:00 PM		
Client ID: 20171101-H2-797-SPOIL		Run ID: WETCHEM_171106I		SeqNo: 4743637		Prep Date: 11/3/2017		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2038 99 1991 0.2772 102 75-125 0

MSD		Sample ID: 1711163-06A MSD				Units: mg/Kg		Analysis Date: 11/6/2017 05:00 PM		
Client ID: 20171101-H2-797-SPOIL		Run ID: WETCHEM_171106I		SeqNo: 4743636		Prep Date: 11/3/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.75 1.0 5 0.2772 29.5 75-125 1.63 7.1 20 S

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110104** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 17102053-05A DUP				Units: mmhos/cm @25°		Analysis Date: 11/6/2017 03:10 PM		
Client ID:		Run ID: WETCHEM_171106G				SeqNo: 4743258		Prep Date: 11/6/2017		DF: 20
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.922	0.10	0	0	0		0.894	3.08	50	

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **110130** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-110130-110130				Units: s.u.			Analysis Date: 11/6/2017 03:41 PM			
Client ID:				Run ID: WETCHEM_171106H				SeqNo: 4743458			Prep Date: 11/6/2017		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		3.92	0.10	4	0	98	90-110	0						

DUP				Sample ID: 1711163-01A DUP				Units: s.u.		Analysis Date: 11/6/2017 03:41 PM			
Client ID: 20171101-H2-797-Bottom (6')				Run ID: WETCHEM_171106H				SeqNo: 4743460		Prep Date: 11/6/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH	8.7	0.10	0	0	0	0-0	8.74	0.459	20				

DUP		Sample ID: 1711237-01A DUP					Units: s.u.		Analysis Date: 11/6/2017 03:41 PM		
Client ID:		Run ID: WETCHEM_171106H			SeqNo: 4743479		Prep Date: 11/6/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	8.21	0.10	0	0	0	0-0	8.15	0.733	20		

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 1711163
Project: H2-797

QC BATCH REPORT

Batch ID: **R223957** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: MB-R223957-R223957				Units: % of sample		Analysis Date: 11/6/2017 03:11 PM		
Client ID:		Run ID: MOIST_171106C				SeqNo: 4744482		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

LCS		Sample ID: LCS-R223957-R223957				Units: % of sample		Analysis Date: 11/6/2017 03:11 PM		
Client ID:		Run ID: MOIST_171106C				SeqNo: 4744483		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 99.99 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 1711194-01B DUP				Units: % of sample		Analysis Date: 11/6/2017 03:11 PM		
Client ID:		Run ID: MOIST_171106C				SeqNo: 4744498		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 4.05 0.050 0 0 0 0-0 4.23 4.35 5

DUP		Sample ID: 1711196-02B DUP				Units: % of sample		Analysis Date: 11/6/2017 03:11 PM		
Client ID:		Run ID: MOIST_171106C				SeqNo: 4744501		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 4.46 0.050 0 0 0 0-0 4.57 2.44 5

The following samples were analyzed in this batch:

1711163-01A	1711163-02A	1711163-03A
1711163-04A	1711163-05A	1711163-06A

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



PROJECT NAME	H2-797	SAMPLER	Blair Rollins					DATE	11/1/17				
PROJECT No.		SITE ID	H2					TURNAROUND	STD				
COMPANY NAME	Caerus Piceance, LLC	EDD FORMAT						TPH/GRO/DRO					
SEND REPORT TO	Jake Janicek	PURCHASE ORDER						BTEX					
ADDRESS	143 Diamond Ave	BILL TO COMPANY	Caerus Piceance, LLC					Table 910 PAH's					
CITY / STATE / ZIP	Parachute Co 81635	INVOICE ATTN TO	Jake Janicek					EO					
PHONE	970-285-9608	ADDRESS	143 Diamond Ave					PH					
FAX		CITY / STATE / ZIP	Parachute CO 81635					SAR					
E-MAIL	jjanicek@caerusoilandgas.com	PHONE	970-285-9608					Benzene					
		FAX						Table 910 Metals					
		E-MAIL	jjanicek@caerusoilandgas.com										

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	TPH/GRO/DRO	BTEX	Table 910 PAH's	EO	PH	SAR	Benzene	Table 910 Metals
1	20171101-H2-797-Bottom(6')	Soil	11/1/17	1145	3			X	X	X	X	X	X	X	
2	20171101-H2-797-SWALL(5')			1300	3			X	X	X	X	X	X	X	
3	20171101-H2-797-EWALL(4')			1315	3			X	X	X	X	X	X	X	
4	20171101-H2-797-WWALL(5')			1330	3			X	X	X	X	X	X	X	
5	20171101-H2-797-NWALL(3')			1345	3			X	X	X	X	X	X	X	
6	20171101-H2-797-SPOLL			1400	3			X	X	X	X	X	X	X	

*Time Zone (Circle): EST CST MST PST Matrix: O=oil S=soil NS=non-soil solid W=water L=liquid E=extract F=filter

For metals or anions, please detail analytes below.

Comments: SR2 3.0% 	QC PACKAGE (check below)	
	X	LEVEL II (Standard QC)
		LEVEL III (Std QC + forms)
		LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

SIGNATURE	PRINTED NAME	DATE	TIME
Blair K Rollins	Blair K Rollins	11/1/17	1500
W. Murtul	W. Murtul	11-1-17	1500
W. Murtul	W. Murtul	11-1-17	1830
Diane F. Skow	Diane F. Skow	11/2/17	0930

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **02-Nov-17 09:30**

Work Order: **1711163**

Received by: **DS**

Checklist completed by Diane Shaw
eSignature

02-Nov-17
Date

Reviewed by: Chad Whelton
eSignature

03-Nov-17
Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.0/3.0 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>11/2/2017 1:07:09 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: