



12-Feb-2018

Brett Middleton  
Caerus Oil and Gas LLC  
143 Diamond Ave.  
Parachute, CO 81635

Re: **H2 797 Remediation Landfarm**

Work Order: **18011606**

Dear Brett,

ALS Environmental received 1 sample on 31-Jan-2018 09:00 AM for the analyses presented in the following report.

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

Sample results are compliant with 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 10.

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 A small icon of the ALS Environmental logo, featuring a blue triangle with a yellow flame.

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RIGHT SOLUTIONS RIGHT PARTNER

**Client:** Caerus Oil and Gas LLC  
**Project:** H2 797 Remediation Landfarm  
**Work Order:** 18011606

## 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>
18011606-01	20180130-H2 (Ex. Mat.)	Soil		1/30/2018 12:45	1/31/2018 09:00	<input type="checkbox"/>

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**Client:** Caerus Oil and Gas LLC  
**Project:** H2 797 Remediation Landfarm  
**Work Order:** 18011606

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**Case Narrative**

Batch 113808, Method DRLVI\_8015\_S, Sample DLCSS1-113808: The LCS recovery was above the upper control limit for DRO. The sample results for this batch may be biased high.

**Client:** Caerus Oil and Gas LLC  
**Project:** H2 797 Remediation Landfarm  
**WorkOrder:** 18011606

## **QUALIFIERS, ACRONYMS, UNITS**

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	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.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
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

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

**ALS Group, USA****Date:** 12-Feb-18

**Client:** Caerus Oil and Gas LLC  
**Project:** H2 797 Remediation Landfarm  
**Sample ID:** 20180130-H2 (Ex. Mat.)  
**Collection Date:** 1/30/2018 12:45 PM

**Work Order:** 18011606  
**Lab ID:** 18011606-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 2/5/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>260</b>		<b>3.3</b>	<b>5.6</b>	<b>mg/Kg-dry</b>	1	2/10/2018 16:49
Surr: 4-Terphenyl-d14	80.6			34-130	%REC	1	2/10/2018 16:49
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 2/2/18		Analyst: <b>MEB</b>
GRO (C6-C10)	U		2.7	6.5	mg/Kg-dry	1	2/3/2018 21:54
Surr: Toluene-d8	99.5			71-123	%REC	1	2/3/2018 21:54
<b>MOISTURE</b>							
			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
Moisture	13		0.025	0.050	% of sample	1	2/3/2018 18:11

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 18011606  
**Project:** H2 797 Remediation Landfarm

**QC BATCH REPORT**

Batch ID: **113808** Instrument ID **GC8** Method: **SW8015C**

<b>MBLK</b>		Sample ID: <b>DBLKS1-113808-113808</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>2/10/2018 07:21 AM</b>		
Client ID:		Run ID: <b>GC8_180209A</b>				SeqNo: <b>4886673</b>		Prep Date: <b>2/5/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.867	0	3.33	0	86.1	34-130	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-113808-113808</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>2/10/2018 08:19 AM</b>		
Client ID:		Run ID: <b>GC8_180209A</b>				SeqNo: <b>4886674</b>		Prep Date: <b>2/5/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	901.1	5.0	666	0	135	65-122	0			S
<i>Surr: 4-Terphenyl-d14</i>	1.533	0	3.33	0	46	34-130	0			

<b>MS</b>		Sample ID: <b>18011519-01B MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>2/10/2018 09:17 AM</b>		
Client ID:		Run ID: <b>GC8_180209A</b>				SeqNo: <b>4886676</b>		Prep Date: <b>2/5/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	1559	5.0	1330	11.88	116	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.414	0	3.326	0	72.6	34-130	0			

<b>MSD</b>		Sample ID: <b>18011519-01B MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>2/10/2018 09:46 AM</b>		
Client ID:		Run ID: <b>GC8_180209A</b>				SeqNo: <b>4886677</b>		Prep Date: <b>2/5/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	1523	5.0	1319	11.88	115	65-122	1559	2.29	30	
<i>Surr: 4-Terphenyl-d14</i>	2.46	0	3.298	0	74.6	34-130	2.414	1.88	30	

The following samples were analyzed in this batch:

18011606-01A

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 18011606  
**Project:** H2 797 Remediation Landfarm

# QC BATCH REPORT

Batch ID: **113749** Instrument ID **GC9** Method: **SW8015D**

<b>MBLK</b>		Sample ID: <b>MBLK-113749-113749</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>2/3/2018 03:32 AM</b>		
Client ID:		Run ID: <b>GC9_180202A</b>				SeqNo: <b>4877516</b>		Prep Date: <b>2/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000	0	0	0		0			
Surr: Toluene-d8	4684	0	5000	0	93.7	71-123	0			

<b>LCS</b>		Sample ID: <b>LCS-113749-113749</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>2/3/2018 02:04 AM</b>		
Client ID:		Run ID: <b>GC9_180202A</b>				SeqNo: <b>4877514</b>		Prep Date: <b>2/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	479900	5,000	500000	0	96	71-123	0			
Surr: Toluene-d8	4240	0	5000	0	84.8	71-123	0			

<b>MS</b>		Sample ID: <b>18011597-01A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>2/3/2018 11:52 PM</b>		
Client ID:		Run ID: <b>GC9_180202A</b>				SeqNo: <b>4877554</b>		Prep Date: <b>2/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	902800	8,700	869900	22630	101	71-123	0			
Surr: Toluene-d8	8053	0	8699	0	92.6	71-123	0			

<b>MSD</b>		Sample ID: <b>18011597-01A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>2/4/2018 12:21 PM</b>		
Client ID:		Run ID: <b>GC9_180202A</b>				SeqNo: <b>4877555</b>		Prep Date: <b>2/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	921000	8,700	869900	22630	103	71-123	902800	2	30	
Surr: Toluene-d8	8102	0	8699	0	93.1	71-123	8053	0.603	30	

The following samples were analyzed in this batch:

18011606-01A

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

Client: Caerus Oil and Gas LLC  
 Work Order: 18011606  
 Project: H2 797 Remediation Landfarm

## QC BATCH REPORT

Batch ID: **R229404** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R229404					Units: % of sample		Analysis Date: 2/3/2018 06:11 PM		
Client ID:			Run ID: MOIST_180203C			SeqNo: 4878097		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture U 0.050

LCS		Sample ID: LCS-R229404				Units: % of sample		Analysis Date: 2/3/2018 06:11 PM		
Client ID:		Run ID: MOIST_180203C				SeqNo: 4878096		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 18011598-03A DUP					Units: % of sample		Analysis Date: 2/3/2018 06:11 PM		
Client ID:			Run ID: MOIST_180203C			SeqNo: 4878075		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 19.33 0.050 0 0 0 0-0 19.33 0 10

<b>DUP</b>				Sample ID: <b>1802113-03B DUP</b>				Units: <b>% of sample</b>			Analysis Date: <b>2/3/2018 06:11 PM</b>			
Client ID:				Run ID: <b>MOIST_180203C</b>				SeqNo: <b>4878092</b>			Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 16.59 0.050 0 0 0 0-0 16.5 0.544 10

The following samples were analyzed in this batch:

18011606-01A

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





## CHAIN OF CUSTODY

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

COC number (for client tracking)

Page 1 of

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

ALS Technichem (HK) Pty Ltd Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2610 1044 Fax: +852 2610 2021 Email: [als@als.com.hk](mailto:als@als.com.hk)

SR2 3.4°C

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **31-Jan-18 09:00**

Work Order: **18011606**

Received by: **DS**

Checklist completed by Diane Shaw 31-Jan-18  
eSignature Date

Reviewed by: Chad Whelton 31-Jan-18  
eSignature Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.4/3.4 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>1/31/2018 2:43:14 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:

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Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: