

Unocal 4 (Unocal 24-4D) (Location ID 335778)
Partially Buried Vessel Removal (Non-Facility ID 435782)
Form 4 (Notice of Completion)
Narrative Attachment

This Form 4 (Notice of Completion) was prepared for the purpose of describing remediation efforts associated with the soil removed during the removal of a partially buried vessel (PBV) (Non-Facility ID 435782) at the Unocal 4 (Unocal 23-4D) (Location ID 335778) pad location in the Caerus Piceance, LLC (Caerus) area of operations. This document will cover all work completed since the requested Form 4 Sundry Notice dated April 9, 2015 (COGCC Document ID 400822758) was submitted to the COGCC and approved.

All impacted soil removed during excavation activities was stockpiled on location and remediated via agitation and mixing. Remediation of stockpiled soil was conducted from spring 2015 through the end of summer 2015. Samples were collected from the stockpiled soil on May 19, 2015, July 22, 2015, and September 2, 2015 and submitted for laboratory analysis of all COGCC Table 910-1 analytes except benzene, toluene, ethylbenzene, and total xylenes (BTEX). The soil was deemed compliant for all BTEX constituents during sampling events conducted on March 20, 2014 and June 26, 2014. Details of these and previous sampling events can be found attached to the Form 4 Sundry Notice dated April 9, 2015 (COGCC Document ID 400822758). Analytical results from the September 2, 2015 sampling event indicated that the soil was compliant with all COGCC Table 910-1 Concentration Levels. Laboratory analytical results are summarized in the attached analytical table and laboratory analytical reports are included as an attachment.

The remediated soil will be blended into the northern cut slope of the pad surface and seeded.

Based on removal of the PBV and soil analytical results, Caerus requests an NFA designation for this project.

Caerus Piceance LLC
Unocal 4 Partially Buried Vault Removal
Soil Sample Confirmation and Background Analytical Results

			Sample ID							
COGCC Table 910-1 Analytical Suite	Table 910-1 Standard	Units	Unocal 4 Landfarm	Unocal 4 Landfarm	Unocal 4 Landfarm	BKGD 1	BKGD 2	BKGD 3	BKGD 4	BKGD 1*
Sample Date			5/19/2015	7/22/2015	9/2/2015	12/7/2012	12/7/2012	12/7/2012	12/7/2012	7/22/2013
Organics										
TPH (DRO)	500	mg/kg	850	490	250	NA	NA	NA	NA	NA
TPH (GRO)	500	mg/kg	37	23	ND	NA	NA	NA	NA	NA
TPH	500	mg/kg	887	513	250	NA	NA	NA	NA	NA
BENZENE	0.17	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
TOLUENE	85	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	100	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
XYLENE TOTAL	175	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	1,000	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	1,000	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	0.22	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	0.022	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	0.22	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2.2	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	22	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	0.022	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1,000	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
FLUORENE	1,000	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	0.22	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	23	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
PYRENE	1,000	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
Metals										
MERCURY	23	mg/kg	20	NA	NA	NA	NA	NA	NA	NA
ARSENIC	0.39	mg/kg	16	NA	NA	6.5	8.5	5.5	9.7	39
BARIUM	15,000	mg/kg	500	NA	NA	NA	NA	NA	NA	NA
CADMIUM	70	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
CHROMIUM (III)	120,000	mg/kg	16	NA	NA	NA	NA	NA	NA	NA
CHROMIUM (IV)	23	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
COPPER	3,100	mg/kg	24	NA	NA	NA	NA	NA	NA	NA
LEAD	400	mg/kg	16	NA	NA	NA	NA	NA	NA	NA
NICKEL	1,600	mg/kg	17	NA	NA	NA	NA	NA	NA	NA
SELENIUM	390	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
SILVER	390	mg/kg	ND	NA	NA	NA	NA	NA	NA	NA
ZINC	23,000	mg/kg	82	NA	NA	NA	NA	NA	NA	NA
Inorganics										
Sodium Absorption Ratio	<12	unitless	0.72	NA	NA	NA	NA	0.67	NA	NA
Electric Conductivity	<4mmhos/cm or 2x background	mmhos/cm	6.1	NA	NA	NA	NA	2.60	NA	NA
pH	6 to 9	SU	8.3	NA	NA	NA	NA	8.48	NA	NA

Notes:

* This background sample was collected near another pad location, Chevron 41-8D (COGCC Location ID 324196)

highlight indicates reading above COGCC Table 910-1 standards

ND - non detect

NA - not analyzed

SU - standard unit

mg/kg - milligram per kilogram

mmhos/cm - millimhos per centimeter

TPH (DRO) - total petroleum hydrocarbons - Diesel range organics

TPH (GRO) - total petroleum hydrocarbons - gasoline range organics

TPH - total petroleum hydrocarbons (TPH-GRO and TPH-DRO combined)

COGCC - Colorado Oil and Gas Conservation Commission



08-Jun-2015

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

Re: **Unocal 4**

Work Order: **15051128**

Dear Jake,

ALS Environmental received 1 sample on 19-May-2015 12:51 PM for the analyses presented in the following report.

This is a REVISED REPORT. The Case Narrative provides information discussing the reason for issuing a revised report. The total number of pages in this revision is 24.

If you have any questions regarding these test results, please feel free to contact me.

Sincerely,

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

Electronically approved by: Les Arnold

Les Arnold
Senior Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Caerus Oil and Gas LLC
Project: Unocal 4
Work Order: 15051128**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>
15051128-01	Unocal 4 Landfarm	Soil		5/19/2015 12:51	5/19/2015 12:51	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC
Project: Unocal 4
WorkOrder: 15051128

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

Client: Caerus Oil and Gas LLC
Project: Unocal 4
Work Order: 15051128

Case Narrative

This report is revised to include results for Ammonia-N, TKN, and Nitrate-Nitrite-N.

Batch 71323, Method SVO_8270_S, Sample 15051128-01B: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference for this analyte.

Batch 71373, Method DRO_8015_S, Sample 15051128-01B: The MS and MSD recoveries were below the lower control limit for ORO (C28-C40). The corresponding result in the parent sample may be biased low for this analyte.

Batch 71373, Method DRO_8015_S, Sample 15051128-01B MS: The matrix spike recovery was outside of the control limit. However, the matrix spike duplicate recovery and the RPD between the MS and MSD were in control. No qualification is required for this analyte: DRO (C10-C28)

Batch 71815, Method NO32_353.2_S, Sample 15051128-01B MS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low.

Batch 71842, Method TKN_4500N_S, Sample 15051128-01B MS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low.

ALS Group USA, Corp

Date: 08-Jun-15

Client: Caerus Oil and Gas LLC

Project: Unocal 4

Work Order: 15051128

Sample ID: Unocal 4 Landfarm

Lab ID: 15051128-01

Collection Date: 5/19/2015 12:51 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	850		SW8015M		Prep Date: 5/22/2015	Analyst: IT
			5.0	mg/Kg-dry	1	5/22/2015 07:02 PM
Surr: 4-Terphenyl-d14	59.6		39-133	%REC	1	5/22/2015 07:02 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	37,000		SW8015D		Prep Date: 5/21/2015	Analyst: IT
			3,000	µg/Kg-dry	1	5/21/2015 07:55 PM
Surr: Toluene-d8	116		50-150	%REC	1	5/21/2015 07:55 PM
MERCURY BY CVAA						
Mercury	20		SW7471B		Prep Date: 5/20/2015	Analyst: RG
			1.6	mg/Kg-dry	100	5/22/2015 05:23 PM
METALS ANALYSIS BY ICP						
Arsenic	16		SW846 6010C		Prep Date: 5/21/2015	Analyst: JEC
			0.47	mg/Kg-dry	1	5/26/2015 12:47 PM
Barium	500		0.47	mg/Kg-dry	1	5/26/2015 12:47 PM
Cadmium	ND		0.94	mg/Kg-dry	1	5/26/2015 12:47 PM
Chromium	16		0.47	mg/Kg-dry	1	5/26/2015 12:47 PM
Copper	24		0.94	mg/Kg-dry	1	5/26/2015 12:47 PM
Lead	16		0.47	mg/Kg-dry	1	5/26/2015 12:47 PM
Nickel	17		0.47	mg/Kg-dry	1	5/26/2015 12:47 PM
Selenium	ND		0.94	mg/Kg-dry	1	5/26/2015 12:47 PM
Silver	ND		0.47	mg/Kg-dry	1	5/26/2015 12:47 PM
Zinc	82		0.94	mg/Kg-dry	1	5/26/2015 12:47 PM
SOLUBLE CATIONS FOR SAR						
Calcium	820		SW846 6010C		Prep Date: 5/27/2015	Analyst: JEC
			5.0	mg/L	10	5/27/2015 01:44 PM
Magnesium	170		2.0	mg/L	10	5/27/2015 01:44 PM
Sodium	87		2.0	mg/L	10	5/27/2015 01:44 PM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	0.72		USDA H60 METHO		Prep Date: 5/27/2015	Analyst: JEC
			0.010	none	1	5/27/2015
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep Date: 5/21/2015	Analyst: RS
			80	µg/Kg-dry	10	5/26/2015 08:39 PM
Anthracene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Benzo(a)anthracene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Benzo(a)pyrene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Benzo(b)fluoranthene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Benzo(k)fluoranthene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Chrysene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Dibenzo(a,h)anthracene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Fluoranthene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Indeno(1,2,3-cd)pyrene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Naphthalene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM

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

ALS Group USA, Corp

Date: 08-Jun-15

Client: Caerus Oil and Gas LLC
Project: Unocal 4
Sample ID: Unocal 4 Landfarm
Collection Date: 5/19/2015 12:51 PM

Work Order: 15051128
Lab ID: 15051128-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Pyrene	ND		80	µg/Kg-dry	10	5/26/2015 08:39 PM
Surr: 2-Fluorobiphenyl	93.4		12-100	%REC	10	5/26/2015 08:39 PM
Surr: 4-Terphenyl-d14	102		25-137	%REC	10	5/26/2015 08:39 PM
Surr: Nitrobenzene-d5	76.6		37-107	%REC	10	5/26/2015 08:39 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO	Prep Date: 5/27/2015	Analyst: JB	
Electrical Conductivity @ Saturation	6.1		0.050	mmhos/cm @2	10	5/27/2015 12:15 PM
CHROMIUM, TRIVALENT			CALCULATION		Analyst: JB	
Chromium, Trivalent	16		0.61	mg/Kg-dry	1	5/26/2015 03:30 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep Date: 5/22/2015	Analyst: MB	
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	5/26/2015 11:15 AM
MOISTURE			E160.3M		Analyst: EVB	
Moisture	18		0.050	% of sample	1	5/21/2015 04:50 PM
AMMONIA AS NITROGEN			A4500-NH3 G-97	Prep Date: 6/3/2015	Analyst: JJG	
Ammonia as Nitrogen	ND		10	mg NH3-N/Kg-dr	1	6/3/2015 12:47 PM
NITROGEN, NITRATE-NITRITE			E353.2	Prep Date: 6/3/2015	Analyst: JB	
Nitrogen, Nitrate-Nitrite	3.9		1.1	mg/Kg-dry	1	6/5/2015 02:29 PM
PH			SW9045D	Prep Date: 5/22/2015	Analyst: KF	
pH	8.3		s.u.		1	5/22/2015 11:10 AM
NITROGEN, TOTAL KJELDAHL			A4500-NH3 G-97	Prep Date: 6/3/2015	Analyst: JB	
Nitrogen, Total Kjeldahl	1,100		78	mg/Kg-dry	5	6/4/2015 03:11 PM

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

ALS Group USA, Corp

Date: 08-Jun-15

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71373** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-71373-71373				Units: mg/Kg		Analysis Date: 5/22/2015 05:52 PM		
Client ID:		Run ID: GC8_150522A				SeqNo: 3290451		Prep Date: 5/22/2015		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								
<i>Surr: 4-Terphenyl-d14</i>	1.959	0	2	0	98	39-133	0			

LCS		Sample ID: DLCSS1-71373-71373				Units: mg/Kg		Analysis Date: 5/22/2015 05:57 PM		
Client ID:		Run ID: GC8_150522A				SeqNo: 3290452		Prep Date: 5/22/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	166.8	5.0	200	0	83.4	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.502	0	2	0	75.1	39-133	0			

MS		Sample ID: 15051128-01B MS				Units: mg/Kg		Analysis Date: 5/22/2015 06:02 PM		
Client ID: Unocal 4 Landfarm		Run ID: GC8_150522A				SeqNo: 3290453		Prep Date: 5/22/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	749.4	7.8	313.8	700.5	15.6	48-110	0			S
<i>Surr: 4-Terphenyl-d14</i>	2.269	0	3.138	0	72.3	39-133	0			

MSD		Sample ID: 15051128-01B MSD				Units: mg/Kg		Analysis Date: 5/22/2015 06:32 PM		
Client ID: Unocal 4 Landfarm		Run ID: GC8_150522A				SeqNo: 3290454		Prep Date: 5/22/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	962.9	7.9	314.9	700.5	83.4	48-110	749.4	24.9	30	
<i>Surr: 4-Terphenyl-d14</i>	1.97	0	3.149	0	62.6	39-133	2.269	14.1	30	

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
 Work Order: 15051128
 Project: Unocal 4

QC BATCH REPORT

Batch ID: **71278** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-71278-71278				Units: µg/Kg		Analysis Date: 5/21/2015 05:02 PM		
Client ID:		Run ID: GC9_150521A				SeqNo: 3287420		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	2,500								
Surr: Toluene-d8	5523	0	5000	0	110	50-150	0			

LCS		Sample ID: LCS-71278-71278				Units: µg/Kg		Analysis Date: 5/21/2015 04:37 PM		
Client ID:		Run ID: GC9_150521A				SeqNo: 3287419		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	501600	2,500	500000	0	100	70-130	0			
Surr: Toluene-d8	4362	0	5000	0	87.2	50-150	0			

MS		Sample ID: 15051046-01A MS				Units: µg/Kg		Analysis Date: 5/21/2015 06:41 PM		
Client ID:		Run ID: GC9_150521A				SeqNo: 3287424		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	559200	2,500	500000	0	112	70-130	0			
Surr: Toluene-d8	4098	0	5000	0	82	50-150	0			

MSD		Sample ID: 15051046-01A MSD				Units: µg/Kg		Analysis Date: 5/21/2015 07:06 PM		
Client ID:		Run ID: GC9_150521A				SeqNo: 3287425		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	566700	2,500	500000	0	113	70-130	559200	1.34	30	
Surr: Toluene-d8	4366	0	5000	0	87.3	50-150	4098	6.33	30	

The following samples were analyzed in this batch:

15051128-01A

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71317** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-71317-71317				Units: mg/Kg		Analysis Date: 5/21/2015 04:20 AM		
Client ID:		Run ID: HG1_150520A				SeqNo: 3285442		Prep Date: 5/20/2015		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-71317-71317				Units: mg/Kg		Analysis Date: 5/21/2015 04:22 AM		
Client ID:		Run ID: HG1_150520A				SeqNo: 3285443		Prep Date: 5/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1818 0.020 0.1665 0 109 80-120 0

MS		Sample ID: 1505770-06CMS				Units: mg/Kg		Analysis Date: 5/21/2015 04:56 AM		
Client ID:		Run ID: HG1_150520A				SeqNo: 3285455		Prep Date: 5/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1297 0.014 0.116 0.009456 104 75-125 0

MSD		Sample ID: 1505770-06CMSD				Units: mg/Kg		Analysis Date: 5/21/2015 04:58 AM		
Client ID:		Run ID: HG1_150520A				SeqNo: 3285456		Prep Date: 5/20/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1304 0.014 0.1151 0.009456 105 75-125 0.1297 0.525 35

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71353** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK		Sample ID: MBLK-71353-71353				Units: mg/L		Analysis Date: 5/22/2015 12:59 AM		
Client ID:		Run ID: ICP2_150521A				SeqNo: 3286844		Prep Date: 5/21/2015		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	ND	0.50								
Chromium	ND	0.25								
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-71353-71353				Units: mg/L		Analysis Date: 5/22/2015 01:05 AM		
Client ID:		Run ID: ICP2_150521A				SeqNo: 3286845		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	3.642	0.19	3.748	0	97.2	80-120	0			
Barium	3.851	0.19	3.748	0	103	80-120	0			
Cadmium	3.7	0.37	3.748	0	98.7	80-120	0			
Chromium	3.96	0.19	3.748	0	106	80-120	0			
Copper	3.998	0.37	3.748	0	107	80-120	0			
Lead	4.005	0.19	3.748	0	107	80-120	0			
Nickel	3.864	0.19	3.748	0	103	80-120	0			
Selenium	3.748	0.37	3.748	0	100	80-120	0			
Silver	3.634	0.19	3.748	0	96.9	80-120	0			
Zinc	3.882	0.37	3.748	0	104	80-120	0			

MS		Sample ID: 1505898-01AMS				Units: mg/Kg		Analysis Date: 5/22/2015 01:43 AM		
Client ID:		Run ID: ICP2_150521A				SeqNo: 3286859		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.726	0.32	6.443	-0.007523	105	75-125	0			
Barium	6.806	0.32	6.443	0.008108	105	75-125	0			
Cadmium	5.925	0.64	6.443	-0.04998	92.7	75-125	0			
Chromium	7.255	0.32	6.443	0.4365	106	75-125	0			
Copper	6.607	0.64	6.443	0.01482	102	75-125	0			
Lead	6.822	0.32	6.443	0.001911	106	75-125	0			
Nickel	6.484	0.32	6.443	0.02621	100	75-125	0			
Selenium	10.57	0.64	6.443	2.751	121	75-125	0			
Silver	5.817	0.32	6.443	-0.01701	90.5	75-125	0			
Zinc	6.61	0.64	6.443	0.2825	98.2	75-125	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71353**

Instrument ID **ICP2**

Method: **SW846 6010C**

MSD				Sample ID: 1505898-01AMSD			Units: mg/Kg		Analysis Date: 5/22/2015 01:49 AM	
Client ID:			Run ID: ICP2_150521A			SeqNo: 3286860		Prep Date: 5/21/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.718	0.33	6.545	-0.007523	103	75-125	6.726	0.125	20	
Barium	6.771	0.33	6.545	0.008108	103	75-125	6.806	0.512	20	
Cadmium	5.976	0.65	6.545	-0.04998	92.1	75-125	5.925	0.862	20	
Chromium	7.321	0.33	6.545	0.4365	105	75-125	7.255	0.916	20	
Copper	6.636	0.65	6.545	0.01482	101	75-125	6.607	0.444	20	
Lead	6.817	0.33	6.545	0.001911	104	75-125	6.822	0.0727	20	
Nickel	6.519	0.33	6.545	0.02621	99.2	75-125	6.484	0.538	20	
Selenium	10.72	0.65	6.545	2.751	122	75-125	10.57	1.41	20	
Silver	5.84	0.33	6.545	-0.01701	89.5	75-125	5.817	0.396	20	
Zinc	6.711	0.65	6.545	0.2825	98.2	75-125	6.61	1.5	20	

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71361** Instrument ID **ICP2** Method: **SW846 6010C**

DUP		Sample ID: 15051260-01CDUP				Units: mg/L		Analysis Date: 5/27/2015 01:55 PM		
Client ID:		Run ID: ICP2_150527B				SeqNo: 3293226		Prep Date: 5/27/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	191.2	5.0	0	0	0	0-0	173.7	9.55		
Magnesium	23.88	2.0	0	0	0	0-0	21.88	8.76		
Sodium	1223	2.0	0	0	0	0-0	1176	3.92		

DUP		Sample ID: 15051260-01CDUP				Units: none		Analysis Date: 5/27/2015		
Client ID:		Run ID: SAR_150527A				SeqNo: 3293324		Prep Date: 5/27/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	22.18	0.010	0	0	0		22.35	0.79	50	

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
 Work Order: 15051128
 Project: Unocal 4

QC BATCH REPORT

Batch ID: 71323 Instrument ID SVMS4 Method: SW846 8270D

MBLK				Sample ID: SBLKS1-71323-71323				Units: µg/Kg			Analysis Date: 5/21/2015 09:01 PM		
Client ID:			Run ID: SVMS4_150521A				SeqNo: 3290494		Prep Date: 5/21/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Acenaphthene	ND	6.7											
Anthracene	ND	6.7											
Benzo(a)anthracene	ND	6.7											
Benzo(a)pyrene	ND	6.7											
Benzo(b)fluoranthene	ND	6.7											
Benzo(k)fluoranthene	ND	6.7											
Chrysene	ND	6.7											
Dibenzo(a,h)anthracene	ND	6.7											
Fluoranthene	ND	6.7											
Indeno(1,2,3-cd)pyrene	ND	6.7											
Naphthalene	ND	6.7											
Pyrene	ND	6.7											
Surr: 2-Fluorobiphenyl	1306	0	1667	0	78.3	12-100	0						
Surr: 4-Terphenyl-d14	1721	0	1667	0	103	25-137	0						
Surr: Nitrobenzene-d5	1125	0	1667	0	67.5	37-107	0						

LCS				Sample ID: SLCSS1-71323-71323			Units: µg/Kg		Analysis Date: 5/21/2015 09:25 PM		
Client ID:			Run ID: SVMS4_150521A			SeqNo: 3290496		Prep Date: 5/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	556.3	6.7	666.7	0	83.4	45-110	0				
Anthracene	643	6.7	666.7	0	96.4	55-105	0				
Benzo(a)anthracene	666.3	6.7	666.7	0	99.9	50-110	0				
Benzo(a)pyrene	686.7	6.7	666.7	0	103	50-110	0				
Benzo(b)fluoranthene	662.3	6.7	666.7	0	99.3	45-115	0				
Benzo(k)fluoranthene	622.3	6.7	666.7	0	93.3	45-115	0				
Chrysene	634	6.7	666.7	0	95.1	55-110	0				
Dibenzo(a,h)anthracene	699.3	6.7	666.7	0	105	40-125	0				
Fluoranthene	694.3	6.7	666.7	0	104	55-115	0				
Indeno(1,2,3-cd)pyrene	652.7	6.7	666.7	0	97.9	40-120	0				
Naphthalene	572.7	6.7	666.7	0	85.9	40-105	0				
Pyrene	679.7	6.7	666.7	0	102	45-125	0				
Surr: 2-Fluorobiphenyl	1389	0	1667	0	83.4	12-100	0				
Surr: 4-Terphenyl-d14	1556	0	1667	0	93.4	25-137	0				
Surr: Nitrobenzene-d5	1306	0	1667	0	78.4	37-107	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 15051128
 Project: Unocal 4

QC BATCH REPORT

Batch ID: 71323 Instrument ID SVMS4 Method: SW846 8270D

MS				Sample ID: 15051142-04C MS			Units: µg/Kg		Analysis Date: 5/21/2015 10:15 PM		
Client ID:			Run ID: SVMS4_150521A			SeqNo: 3290499		Prep Date: 5/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1103	13	1315	0	83.8	45-110	0				
Anthracene	1319	13	1315	16.86	99	55-105	0				
Benzo(a)anthracene	1351	13	1315	37.02	99.9	50-110	0				
Benzo(a)pyrene	1414	13	1315	31.4	105	50-110	0				
Benzo(b)fluoranthene	1396	13	1315	47.26	103	45-115	0				
Benzo(k)fluoranthene	1270	13	1315	21.15	95	45-115	0				
Chrysene	1296	13	1315	39	95.6	55-110	0				
Dibenzo(a,h)anthracene	1425	13	1315	0	108	40-125	0				
Fluoranthene	1499	13	1315	116	105	55-115	0				
Indeno(1,2,3-cd)pyrene	1358	13	1315	23.14	101	40-120	0				
Naphthalene	1107	13	1315	0	84.1	40-105	0				
Pyrene	1341	13	1315	86.59	95.4	45-125	0				
Surr: 2-Fluorobiphenyl	2643	0	3287	0	80.4	12-100	0				
Surr: 4-Terphenyl-d14	2961	0	3287	0	90.1	25-137	0				
Surr: Nitrobenzene-d5	2515	0	3287	0	76.5	37-107	0				

MSD				Sample ID: 15051142-04C MSD			Units: µg/Kg		Analysis Date: 5/21/2015 10:40 PM		
Client ID:			Run ID: SVMS4_150521A			SeqNo: 3290501		Prep Date: 5/21/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1138	13	1312	0	86.7	45-110	1103	3.14	30		
Anthracene	1320	13	1312	16.86	99.4	55-105	1319	0.0923	30		
Benzo(a)anthracene	1382	13	1312	37.02	103	50-110	1351	2.24	30		
Benzo(a)pyrene	1427	13	1312	31.4	106	50-110	1414	0.946	30		
Benzo(b)fluoranthene	1385	13	1312	47.26	102	45-115	1396	0.823	30		
Benzo(k)fluoranthene	1264	13	1312	21.15	94.8	45-115	1270	0.463	30		
Chrysene	1301	13	1312	39	96.2	55-110	1296	0.401	30		
Dibenzo(a,h)anthracene	1384	13	1312	0	106	40-125	1425	2.92	30		
Fluoranthene	1435	13	1312	116	101	55-115	1499	4.37	30		
Indeno(1,2,3-cd)pyrene	1382	13	1312	23.14	104	40-120	1358	1.76	30		
Naphthalene	1066	13	1312	0	81.3	40-105	1107	3.7	30		
Pyrene	1423	13	1312	86.59	102	45-125	1341	5.92	30		
Surr: 2-Fluorobiphenyl	2704	0	3279	0	82.5	12-100	2643	2.3	40		
Surr: 4-Terphenyl-d14	3082	0	3279	0	94	25-137	2961	4.03	40		
Surr: Nitrobenzene-d5	2499	0	3279	0	76.2	37-107	2515	0.649	40		

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71361** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 15051260-01C DUP				Units: mmhos/cm @25°		Analysis Date: 5/27/2015 12:15 PM		
Client ID:		Run ID: WETCHEM_150527C				SeqNo: 3292516		Prep Date: 5/27/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	8.12	0.050	0	0	0		7.76	4.53	50	

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71392** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-71392-71392				Units: s.u.		Analysis Date: 5/22/2015 11:10 AM		
Client ID:		Run ID: WETCHEM_150522F			SeqNo: 3287862		Prep Date: 5/22/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	4.04	0	4	0	101	90-110	0			

DUP		Sample ID: 15051121-01A DUP				Units: s.u.		Analysis Date: 5/22/2015 11:10 AM		
Client ID:		Run ID: WETCHEM_150522F				SeqNo: 3287872		Prep Date: 5/22/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.61	0	0	0	0	0-0	7.59	0.263	20	

DUP				Sample ID: 15051237-01A DUP				Units: s.u.		Analysis Date: 5/22/2015 11:10 AM	
Client ID:			Run ID: WETCHEM_150522F			SeqNo: 3287879		Prep Date: 5/22/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	7.58	0	0	0	0	0-0	7.36	2.95	20		

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71459** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-71459-71459				Units: mg/Kg		Analysis Date: 5/26/2015 11:15 AM		
Client ID:		Run ID: WETCHEM_150526H		SeqNo: 3290348		Prep Date: 5/22/2015		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-71459-71459				Units: mg/Kg		Analysis Date: 5/26/2015 11:15 AM		
Client ID:		Run ID: WETCHEM_150526H		SeqNo: 3290349		Prep Date: 5/22/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.39 1.0 5 0 87.8 80-120 0

MS		Sample ID: 15051260-01B MS				Units: mg/Kg		Analysis Date: 5/26/2015 11:15 AM		
Client ID:		Run ID: WETCHEM_150526H		SeqNo: 3290352		Prep Date: 5/22/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.562 0.95 4.762 0.2525 69.5 75-125 0 S

MS		Sample ID: 15051260-01B MSI				Units: mg/Kg		Analysis Date: 5/26/2015 11:15 AM		
Client ID:		Run ID: WETCHEM_150526H		SeqNo: 3290354		Prep Date: 5/22/2015		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1511 99 2947 0.2525 51.3 75-125 0 S

MSD		Sample ID: 15051260-01B MSD				Units: mg/Kg		Analysis Date: 5/26/2015 11:15 AM		
Client ID:		Run ID: WETCHEM_150526H		SeqNo: 3290353		Prep Date: 5/22/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.949 1.0 5.102 0.2525 72.5 75-125 3.562 10.3 20 S

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71815** Instrument ID **LACHAT2** Method: **E353.2**

MBLK		Sample ID: MBLK-71815-71815				Units: mg/Kg		Analysis Date: 6/5/2015 02:29 PM		
Client ID:		Run ID: LACHAT2_150605G		SeqNo: 3310263		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Nitrate-Nitrite ND 1.0

LCS		Sample ID: LCS-71815-71815				Units: mg/Kg		Analysis Date: 6/5/2015 02:29 PM		
Client ID:		Run ID: LACHAT2_150605G		SeqNo: 3310264		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Nitrate-Nitrite 50.45 1.0 50 0 101 80-120 0

MS		Sample ID: 15051128-01B MS				Units: mg/Kg		Analysis Date: 6/5/2015 02:29 PM		
Client ID: Unocal 4 Landfarm		Run ID: LACHAT2_150605G		SeqNo: 3310266		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Nitrate-Nitrite 33.93 0.90 45.13 3.23 68 75-125 0 S

MSD		Sample ID: 15051128-01B MSD				Units: mg/Kg		Analysis Date: 6/5/2015 02:29 PM		
Client ID: Unocal 4 Landfarm		Run ID: LACHAT2_150605G		SeqNo: 3310267		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Nitrate-Nitrite 35.38 0.85 42.66 3.23 75.4 75-125 33.93 4.21 35

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71816** Instrument ID **LACHAT2** Method: **A4500-NH3 G-97**

MBLK		Sample ID: MBLK-71816-71816				Units: mg NH3-N/Kg		Analysis Date: 6/3/2015 12:47 PM		
Client ID:		Run ID: LACHAT2_150603I		SeqNo: 3304628		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Ammonia as Nitrogen ND 15

LCS		Sample ID: LCS-71816-71816				Units: mg NH3-N/Kg		Analysis Date: 6/3/2015 12:47 PM		
Client ID:		Run ID: LACHAT2_150603I		SeqNo: 3304629		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Ammonia as Nitrogen 51.2 15 50 0 102 70-130 0

MS		Sample ID: 15051128-01B MS				Units: mg NH3-N/Kg		Analysis Date: 6/3/2015 12:47 PM		
Client ID: Unocal 4 Landfarm		Run ID: LACHAT2_150603I		SeqNo: 3304631		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Ammonia as Nitrogen 26.67 9.0 30.12 3.601 76.6 70-130 0

MSD		Sample ID: 15051128-01B MSD				Units: mg NH3-N/Kg		Analysis Date: 6/3/2015 12:47 PM		
Client ID: Unocal 4 Landfarm		Run ID: LACHAT2_150603I		SeqNo: 3304632		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Ammonia as Nitrogen 27.12 8.8 29.41 3.601 80 70-130 26.67 1.65 30

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **71842** Instrument ID **LACHAT2** Method: **A4500-NH3 G-97**

MBLK		Sample ID: MBLK-71842-71842				Units: mg/Kg		Analysis Date: 6/4/2015 03:11 PM		
Client ID:		Run ID: LACHAT2_150604H		SeqNo: 3307244		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Total Kjeldahl ND 5.0

LCS		Sample ID: LCS-71842-71842				Units: mg/Kg		Analysis Date: 6/4/2015 03:11 PM		
Client ID:		Run ID: LACHAT2_150604H		SeqNo: 3307245		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Total Kjeldahl 99.22 5.0 100 0 99.2 80-120 0

MS		Sample ID: 15051128-01B MS				Units: mg/Kg		Analysis Date: 6/4/2015 03:11 PM		
Client ID: Unocal 4 Landfarm		Run ID: LACHAT2_150604H		SeqNo: 3307247		Prep Date: 6/3/2015		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Total Kjeldahl 1044 59 237 885.9 66.7 75-125 0 S

MSD		Sample ID: 15051128-01B MSD				Units: mg/Kg		Analysis Date: 6/4/2015 03:11 PM		
Client ID: Unocal 4 Landfarm		Run ID: LACHAT2_150604H		SeqNo: 3307248		Prep Date: 6/3/2015		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Total Kjeldahl 1109 64 255.1 885.9 87.5 75-125 1044 6.07 35

LCS2		Sample ID: LCS2-71842-71842				Units: mg/Kg		Analysis Date: 6/4/2015 03:11 PM		
Client ID:		Run ID: LACHAT2_150604H		SeqNo: 3307249		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Nitrogen, Total Kjeldahl 98.41 5.0 100 0 98.4 80-120 0

The following samples were analyzed in this batch:

15051128-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15051128
Project: Unocal 4

QC BATCH REPORT

Batch ID: **R163969** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: WBLKS-R163969				Units: % of sample		Analysis Date: 5/21/2015 04:50 PM		
Client ID:		Run ID: MOIST_150521B				SeqNo: 3287775		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-R163969				Units: % of sample		Analysis Date: 5/21/2015 04:50 PM		
Client ID:		Run ID: MOIST_150521B				SeqNo: 3287774		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: 15051160-03A DUP				Units: % of sample		Analysis Date: 5/21/2015 04:50 PM		
Client ID:		Run ID: MOIST_150521B				SeqNo: 3287758		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 14.25 0.050 0 0 0 14.42 1.19 20

DUP		Sample ID: 15051160-11A DUP				Units: % of sample		Analysis Date: 5/21/2015 04:50 PM		
Client ID:		Run ID: MOIST_150521B				SeqNo: 3287767		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 15.16 0.050 0 0 0 15.22 0.395 20

The following samples were analyzed in this batch:

15051128-01B

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

From: (616) 298-1033
 Nick Martinez
 ALS Environmental
 127 E. 1st Street

Origin ID: RILA



J151215022303uv

Ship Date: 19MAY15
 ActWgt: 44.0 LB
 CAD: 2264840/NET3610

Dims: 24 X 15 X 15 IN

PARACHUTE, CO 81635

Delivery Address Bar Code



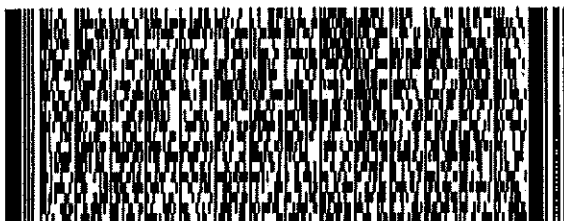
Ref # 051915-1
 Invoice #
 PO # Parachute
 Dept #

SHIP TO: (616) 399-6870

BILL SENDER

sample receiving
 ALS Laboratory Group
 3352 128TH AVE

HOLLAND, MI 49424



TRK# 7736 4082 5027
 0201 Name

XX

ALS Parachute Custody

Time 1770

Date 10

19MAY 10:30A
 SECURITY OVERNIGHT

49424

MI-US

GRR



537J3C918AEE4B

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **19-May-15 12:51**

Work Order: **15051128**

Received by: **DS**

Checklist completed by Diane Shaw 20-May-15
eSignature Date

Reviewed by: Tom Bramish 20-May-15
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 checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input 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>0.6 c</u> <u>SR2</u>		
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>5/20/2015 2:47:01 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:



03-Aug-2015

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

Re: **Unocal 4**

Work Order: **15071323**

Dear Jake,

ALS Environmental received 1 sample on 23-Jul-2015 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 NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

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

Sincerely,

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

Electronically approved by: Les Arnold

Les Arnold
Senior Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

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Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Caerus Oil and Gas LLC
Project: Unocal 4
Work Order: 15071323

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>
15071323-01	Unocal 4 Landfarm	Soil		7/22/2015 09:00	7/23/2015 09:30	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC
Project: Unocal 4
WorkOrder: 15071323

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

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

Client: Caerus Oil and Gas LLC
Project: Unocal 4
Work Order: 15071323

Case Narrative

Samples for the above noted Work Order were received on 07/23/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

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

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

Sample Receiving:

No deviations or anomalies were noted.

Volatile Organics:

No deviations or anomalies were noted.

Extractable Organics:

No deviations or anomalies were noted.

Metals:

No deviations or anomalies were noted.

Wet Chemistry:

No deviations or anomalies were noted.

ALS Group USA, Corp**Date:** 03-Aug-15**Client:** Caerus Oil and Gas LLC**Project:** Unocal 4**Work Order:** 15071323**Sample ID:** Unocal 4 Landfarm**Lab ID:** 15071323-01**Collection Date:** 7/22/2015 09:00 AM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	490		SW8015M		Prep: SW3541 / 7/27/15	Analyst: IT
			24	mg/Kg-dry	5	7/29/2015 12:27 PM
<i>Surr: 4-Terphenyl-d14</i>	<i>72.7</i>		<i>39-133</i>	<i>%REC</i>	<i>5</i>	7/29/2015 12:27 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	23		SW8015D		Prep: SW5035 / 7/31/15	Analyst: IT
			2.9	mg/Kg-dry	1	8/1/2015 02:45 AM
<i>Surr: Toluene-d8</i>	<i>93.5</i>		<i>50-150</i>	<i>%REC</i>	<i>1</i>	8/1/2015 02:45 AM
MOISTURE						
Moisture	13		E160.3M			Analyst: EVB
			0.050	% of sample	1	7/28/2015 01:02 PM

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

ALS Group USA, Corp

Date: 03-Aug-15

Client: Caerus Oil and Gas LLC
Work Order: 15071323
Project: Unocal 4

QC BATCH REPORT

Batch ID: **74025** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-74025-74025				Units: mg/Kg		Analysis Date: 7/28/2015 07:57 PM		
Client ID:		Run ID: GC8_150728A				SeqNo: 3391950		Prep Date: 7/27/2015		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								
<i>Surr: 4-Terphenyl-d14</i>	1.369	0	2	0	68.5	39-133	0			

LCS		Sample ID: DLCSS1-74025-74025				Units: mg/Kg		Analysis Date: 7/28/2015 08:27 PM		
Client ID:		Run ID: GC8_150728A				SeqNo: 3391951		Prep Date: 7/27/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	150.4	5.0	200	0	75.2	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.232	0	2	0	61.6	39-133	0			

MS		Sample ID: 15071274-04B MS				Units: mg/Kg		Analysis Date: 7/28/2015 08:57 PM		
Client ID:		Run ID: GC8_150728A				SeqNo: 3391953		Prep Date: 7/27/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	252.9	8.2	329	20.35	70.7	48-110	0			
<i>Surr: 4-Terphenyl-d14</i>	2.248	0	3.29	0	68.3	39-133	0			

MSD		Sample ID: 15071274-04B MSD				Units: mg/Kg		Analysis Date: 7/28/2015 09:27 PM		
Client ID:		Run ID: GC8_150728A				SeqNo: 3391974		Prep Date: 7/27/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	247.4	8.2	328.7	20.35	69.1	48-110	252.9	2.2	30	
<i>Surr: 4-Terphenyl-d14</i>	2.074	0	3.287	0	63.1	39-133	2.248	8.03	30	

The following samples were analyzed in this batch:

15071323-01A

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

Client: Caerus Oil and Gas LLC
 Work Order: 15071323
 Project: Unocal 4

QC BATCH REPORT

Batch ID: **74273** Instrument ID **GC10** Method: **SW8015D**

MBLK		Sample ID: MBLK-74273-74273				Units: µg/Kg		Analysis Date: 7/31/2015 06:16 PM		
Client ID:		Run ID: GC10_150731A				SeqNo: 3399299		Prep Date: 7/31/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	2,500								
Surr: Toluene-d8	4906	0	5000	0	98.1	50-150	0			

LCS		Sample ID: LCS-74273-74273				Units: µg/Kg		Analysis Date: 7/31/2015 05:52 PM		
Client ID:		Run ID: GC10_150731A				SeqNo: 3399297		Prep Date: 7/31/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	513400	2,500	500000	0	103	70-130	0			
Surr: Toluene-d8	4994	0	5000	0	99.9	50-150	0			

MS		Sample ID: 15071742-01A MS				Units: µg/Kg		Analysis Date: 7/31/2015 09:06 PM		
Client ID:		Run ID: GC10_150731A				SeqNo: 3399312		Prep Date: 7/31/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	554900	2,500	500000	0	111	70-130	0			
Surr: Toluene-d8	4899	0	5000	0	98	50-150	0			

MSD		Sample ID: 15071742-01A MSD				Units: µg/Kg		Analysis Date: 7/31/2015 09:31 PM		
Client ID:		Run ID: GC10_150731A				SeqNo: 3399313		Prep Date: 7/31/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	571600	2,500	500000	0	114	70-130	554900	2.97	30	
Surr: Toluene-d8	5043	0	5000	0	101	50-150	4899	2.9	30	

The following samples were analyzed in this batch:

15071323-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 15071323
Project: Unocal 4

QC BATCH REPORT

Batch ID: **R168553** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: WBLKS-R168553				Units: % of sample		Analysis Date: 7/28/2015 01:02 PM		
Client ID:		Run ID: MOIST_150728A				SeqNo: 3391618		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-R168553				Units: % of sample		Analysis Date: 7/28/2015 01:02 PM		
Client ID:		Run ID: MOIST_150728A				SeqNo: 3391617		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: 15071336-01B DUP				Units: % of sample		Analysis Date: 7/28/2015 01:02 PM		
Client ID:		Run ID: MOIST_150728A				SeqNo: 3391573		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 8.77 0.050 0 0 0 9.38 6.72 20

DUP		Sample ID: 15071492-01A DUP				Units: % of sample		Analysis Date: 7/28/2015 01:02 PM		
Client ID:		Run ID: MOIST_150728A				SeqNo: 3391585		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 6.53 0.050 0 0 0 7.59 15 20

The following samples were analyzed in this batch:

15071323-01A

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



Form 2021-8





1571323

PAGE

of

DISPOSAL

By Lab or Return to Client

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Jake Janicek	7-22-15	1400
RECEIVED BY		JM	7-22-15	1400
RELINQUISHED BY		W	7-22-15	1410
RECEIVED BY		KEITH WIERZENIA	7/23/15	0930
RELINQUISHED BY				
RECEIVED BY				

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **23-Jul-15 09:30**

Work Order: **15071323**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

23-Jul-15
Date

Reviewed by: Lee Arnold
eSignature

24-Jul-15
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>3.8 C</u> <u>SR2</u>		
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>7/23/2015 3:18:35 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:



10-Sep-2015

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

Re: **Unocal 4**

Work Order: **1509166**

Dear Jake,

ALS Environmental received 1 sample on 03-Sep-2015 10:00 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 NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

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

Sincerely,

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

Electronically approved by: Les Arnold

Les Arnold
Senior Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

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Client: Caerus Oil and Gas LLC
Project: Unocal 4
Work Order: 1509166**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>
1509166-01	Unocal 4 Landfarm	Soil		9/2/2015 14:35	9/3/2015 10:00	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC
Project: Unocal 4
Work Order: 1509166

Case Narrative

Samples for the above noted Work Order were received on 09/03/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

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

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

Sample Receiving:

No deviations or anomalies were noted.

Volatile Organics:

No deviations or anomalies were noted.

Extractable Organics:

Batch 75640, Method 8015 for DRO; Sample 1509166-01A; The surrogate recovery was high due to matrix interference.

No other deviations or anomalies were noted.

Metals:

No deviations or anomalies were noted.

Wet Chemistry:

No deviations or anomalies were noted.

ALS Group USA, Corp**Date:** 10-Sep-15**Client:** Caerus Oil and Gas LLC**Project:** Unocal 4**Work Order:** 1509166**Sample ID:** Unocal 4 Landfarm**Lab ID:** 1509166-01**Collection Date:** 9/2/2015 02:35 PM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	250		SW8015M		Prep: SW3541 / 9/4/15	Analyst: IT
			4.8	mg/Kg-dry	1	9/4/2015 06:32 PM
<i>Surr: 4-Terphenyl-d14</i>	<i>143</i>	<i>S</i>	<i>39-133</i>	<i>%REC</i>	<i>1</i>	9/4/2015 06:32 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 / 9/3/15	Analyst: IT
			2.9	mg/Kg-dry	1	9/3/2015 04:40 PM
<i>Surr: Toluene-d8</i>	<i>104</i>		<i>50-150</i>	<i>%REC</i>	<i>1</i>	9/3/2015 04:40 PM
MOISTURE						
Moisture	14		E160.3M			Analyst: TM
			0.050	% of sample	1	9/9/2015 03:57 PM

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

Client: Caerus Oil and Gas LLC
Project: Unocal 4
WorkOrder: 1509166

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

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

Client: Caerus Oil and Gas LLC

QC BATCH REPORT

Work Order: 1509166

Project: Unocal 4

Batch ID: 75640

Instrument ID GC8

Method: SW8015M

MBLK		Sample ID: DBLKS1-75640-75640				Units: mg/Kg		Analysis Date: 9/4/2015 04:03 PM		
Client ID:		Run ID: GC8_150904A				SeqNo: 3447431		Prep Date: 9/4/2015		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

1.512

0

2

0

75.6

39-133

0

LCS		Sample ID: DLCSS1-75640-75640				Units: mg/Kg		Analysis Date: 9/4/2015 04:33 PM		
Client ID:		Run ID: GC8_150904A				SeqNo: 3447432		Prep Date: 9/4/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

190.4

5.0

200

0

95.2

61-109

0

Surr: 4-Terphenyl-d14

1.215

0

2

0

60.7

39-133

0

MS		Sample ID: 1509168-04B MS				Units: mg/Kg		Analysis Date: 9/4/2015 05:03 PM		
Client ID:		Run ID: GC8_150904A				SeqNo: 3447433		Prep Date: 9/4/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

150

4.1

165.7

11.51

83.6

48-110

0

Surr: 4-Terphenyl-d14

1.036

0

1.657

0

62.5

39-133

0

MSD		Sample ID: 1509168-04B MSD				Units: mg/Kg		Analysis Date: 9/4/2015 05:33 PM		
Client ID:		Run ID: GC8_150904A				SeqNo: 3447434		Prep Date: 9/4/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

127.9

4.1

162.3

11.51

71.8

48-110

150

15.9

30

Surr: 4-Terphenyl-d14

0.9941

0

1.623

0

61.3

39-133

1.036

4.12

30

The following samples were analyzed in this batch:

1509166-01A

Client: Caerus Oil and Gas LLC
Work Order: 1509166
Project: Unocal 4

QC BATCH REPORT

Batch ID: **75618** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-75618-75618				Units: µg/Kg		Analysis Date: 9/3/2015 04:15 PM		
Client ID:		Run ID: GC9_150903A				SeqNo: 3445799		Prep Date: 9/3/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	2,500								
Surr: Toluene-d8	5618	0	5000	0	112	50-150	0			

LCS		Sample ID: LCS-75618-75618				Units: µg/Kg		Analysis Date: 9/3/2015 03:50 PM		
Client ID:		Run ID: GC9_150903A				SeqNo: 3445796		Prep Date: 9/3/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	560900	2,500	500000	0	112	70-130	0			
Surr: Toluene-d8	5213	0	5000	0	104	50-150	0			

MS		Sample ID: 1509169-02A MS				Units: µg/Kg		Analysis Date: 9/3/2015 07:08 PM		
Client ID:		Run ID: GC9_150903A				SeqNo: 3445813		Prep Date: 9/3/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	507600	2,500	500000	0	102	70-130	0			
Surr: Toluene-d8	5198	0	5000	0	104	50-150	0			

MSD		Sample ID: 1509169-02A MSD				Units: µg/Kg		Analysis Date: 9/3/2015 07:32 PM		
Client ID:		Run ID: GC9_150903A				SeqNo: 3445815		Prep Date: 9/3/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	490900	2,500	500000	0	98.2	70-130	507600	3.35	30	
Surr: Toluene-d8	5074	0	5000	0	101	50-150	5198	2.41	30	

The following samples were analyzed in this batch: 1509166-01A

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

Client: Caerus Oil and Gas LLC
Work Order: 1509166
Project: Unocal 4

QC BATCH REPORT

Batch ID: **R171338** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: WBLKS-R171338					Units: % of sample		Analysis Date: 9/9/2015 03:57 PM		
Client ID:		Run ID: MOIST_150909B					SeqNo: 3452043		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-R171338				Units: % of sample		Analysis Date: 9/9/2015 03:57 PM		
Client ID:		Run ID: MOIST_150909B				SeqNo: 3452042		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: 1509166-01A DUP				Units: % of sample		Analysis Date: 9/9/2015 03:57 PM			
Client ID: Unocal 4 Landfarm				Run ID: MOIST_150909B				SeqNo: 3452021		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

Moisture 13.98 0.050 0 0 0 13.67 2.24 20

DUP				Sample ID: 1509294-01B DUP				Units: % of sample			Analysis Date: 9/9/2015 03:57 PM			
Client ID:				Run ID: MOIST_150909B				SeqNo: 3452035			Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

Moisture 16.52 0.050 0 0 0 18.75 12.6 20

The following samples were analyzed in this batch:

1509166-01A

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



ALS Environmental

3325 128th Avenue
Holland Michigan 49424 (616) 389-6070

Chain-of-Custody

Form 202r8

WORKORDER #

1509166

PROJECT NAME		Unocal 4		SAMPLER		Tyler Rust		DATE		9/2/15		PAGE		1 of 1	
PROJECT No.				SITE ID				TURNAROUND		STD 5 Day		DISPOSAL		By Lab or Return to	
COMPANY NAME		Caerus Piceance, LLC		PURCHASE ORDER				TPH							
SEND REPORT TO		Jake Janicek		BILL TO COMPANY		Caerus Piceance, LLC		BTEX							
ADDRESS		120 N. Railroad, suite D		INVOICE ATTN TO		Jake Janicek		Table 910 PAH's							
CITY / STATE / ZIP		Parachute Co. 81635		ADDRESS		120 N. Railroad, suite D		Table 910 Metals							
PHONE		870-285-8608		CITY / STATE / ZIP		Parachute Co. 81635		EC							
FAX				PHONE		870-285-8608		PH							
E-MAIL		jjanicek@caerusoilandgas.com		FAX				SAR							
				E-MAIL		invoices@caerusoilandgas.com									
Sample Description		Sample Date		Sample Time		Matrix		# Batches		Pres.					
Unocal 4 Landfarm		9/2/15		14:35		Soil		1		-		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:	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
Tyler Rust	Tyler Rust	9/2/15	16:10
[Signature]	[Signature]	9-2-15	16:50
[Signature]	[Signature]	9-2-15	16:12
[Signature]	KEITH	9/3/15	10:00

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **03-Sep-15 10:00**

Work Order: **1509166**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

03-Sep-15
Date

Reviewed by: Lee Arnold
eSignature

03-Sep-15
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>4.2/4.2 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>9/3/2015 10:18:03 AM</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: