

December 6, 2019

Jake Janicek
EH&S Specialist
143 Diamond Avenue
Parachute, Colorado 81635

**RE: Site Assessment Summary (Remediation Number 14181)
L19-595
Caerus Oil & Gas, LLC
Garfield County, Colorado**

Dear Mr. Janicek:

LT Environmental, Inc. (LTE) was contracted by Caerus Oil and Gas, LLC (Caerus) to conduct site assessment, soil sampling, and soil vapor extraction (SVE) well installation associated with a release of condensate and production water at the L19-595 pad location (Facility ID: 466606) (Site). A failed dumphine caused the release of an unknown volume of produced water and condensate. The Site is located in Caerus's Middle Fork area of operation located in Garfield, County (Figure 1).

Soil Assessment Activities

Between November 5 and November 13, 2019, LTE personnel conducted site assessment activities at the Site. Prior to advancement of drilling equipment all proposed soil boring locations were vertically cleared to depths raging from 8 feet below ground surface (bgs) to 15 feet bgs using a hydro-vacuum truck. Using a track-mounted drill rig equipped with hollow stem drilling technology a total of 10 soil borings were advanced to depths ranging from 20 feet bgs to 35 feet bgs. The drilling operations were directed by an LTE geologist who inspected the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soil was characterized by visually inspecting the soil sample and field screening the soil headspace using a photoionization detector (PID) to monitor for the presence of volatile organic vapors. Two soil samples were submitted from each boring location except for SB04 and SB05 locations, where three soil samples were submitted. A total of 22 soil samples were collected at depths ranging from 15-16.5 feet bgs to 35-36.5 feet bgs. No groundwater was encountered during assessment activities. Four of the ten soil borings were converted to soil vapor extraction (SVE) wells by installing screened polyvinyl chloride (PVC) casing through the identified hydrocarbon impacted zone and solid PVC piping to ground surface. The SVE wells were protected by installing a solid steel riser over the well to approximately three feet above ground surface. All soil boring samples were submitted to ALS Environmental of Holland, Michigan for analysis of constituents identified in Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1. The Soil Boring Logs are



included as Attachment 1. The soil boring and SVE well locations are depicted on the attached Figure 2.

Analytical Results

Laboratory analytical results of all soil samples indicate concentrations of analytes that are within the COGCC Table 910-1 Concentration Levels except for total petroleum hydrocarbons (TPH), benzene, total xylenes, arsenic, electrical conductivity (EC), and sodium adsorption ratio (SAR). Of the 22 samples collected, four exceeded the COGCC Table 910-1 Concentration Level for TPH with concentrations ranging from 2,150 milligrams per kilogram (mg/kg) in soil sample 20191105-L19-595 (SB02) 15-16.5' to 11,000 mg/kg in soil sample 20191106-L19-595 (SB05) 15-16.5'. Three of the 22 soil samples exceeded the COGCC Table 910-1 Concentration Level for benzene with concentrations ranging from 0.22 mg/kg in soil sample 20191106-L19-595 (SB05) 15-16.5' to 0.65 mg/kg in soil sample 20191105-L19-595 (SB01) 20-21.5'. Two of the 22 soil samples exceeded the COGCC Table 910-1 Concentration Level for total xylenes with concentrations ranging from 210 mg/kg in soil sample 20191105-L19-595 (SB01) 20-21.5' to 420 mg/kg in soil sample 20191106-L19-595 (SB05) 15-16.5'. All toluene and ethylbenzene concentrations were either below the laboratory detection limit or within the COGCC Table 910-1 Concentration Levels. All 22 soil samples collected exceeded the COGCC Table 910-1 Concentration Level for arsenic with concentrations ranging from 11 mg/kg in soil sample 20191113-L19-595 (SB09) 35-36.5' to 35 mg/kg in soil sample 20191107-L19-595 (SB06) 20-21.5'. Laboratory analytical results of EC indicate 12 of the 22 soil samples collected exceeded the COGCC Table 910-1 Concentration Level with concentrations ranging from 5.9 millimhos/centimeter (mmhos/cm) in soil sample 20191106-L19-595 (SB03) 15-16.5' to 19 mmhos/cm in soil sample 20191107-L19-595 (SB06) 25-26.5'. Laboratory analytical results of SAR indicate four of the 22 soil samples exceeded the COGCC Table 910-1 Concentrations Levels with concentrations ranging from 13 mg/kg in soil sample 20191106-L19-595 (SB05) 20-21.5' to 29 mg/kg in soil sample 20191106-L19-595 (SB03) 15-16.5'. Of the 22 soil samples collected, soil sample 20191113-L19-595 (SB10) 20-21.5' exceeded the COGCC Table 910-1 Concentration Level for pH with a value of 9.08. Laboratory analytical results are included as Attachment 2 and summarized in Table 1.



Please call us at (970) 285-9985 if you have any questions regarding this report or require additional information.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read "D. Held".

Dustin Held
Project Geologist

A handwritten signature in black ink, appearing to read "Chris McKisson".

Chris McKisson
Western Slope Manager

Attachments:

Figure 1 – Site Location Map

Figure 2 – Soil Boring Location Map

Table 1 – Soil Laboratory Results Summary Table

Attachment 1 – Soil Boring Logs

Attachment 2 – Laboratory Analytical Reports

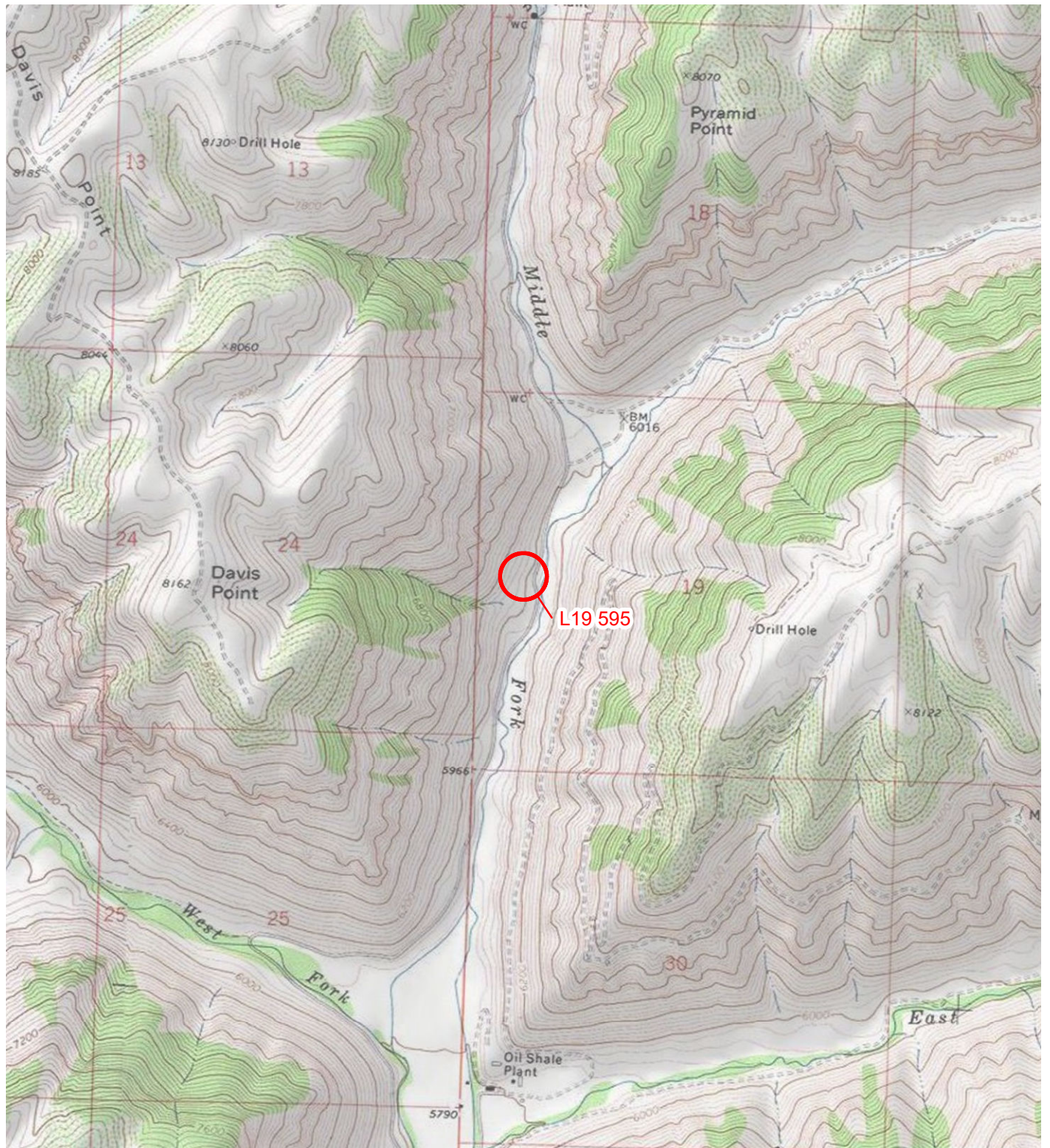


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

COLORADO

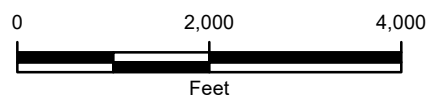
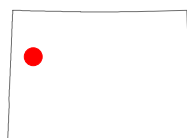


FIGURE 1
SITE LOCATION MAP
L19 595
LOT 9 AND LOT14 SEC 19-T5S-R95W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS, LLC





IMAGE COURTESY OF GOOGLE EARTH 2016

LEGEND

- SOIL BORING
- SOIL BORING/SOIL VAPOR EXTRACTION WELL

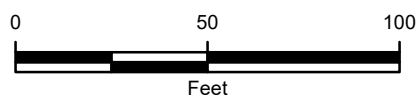


FIGURE 2
SOIL BORING LOCATION MAP
 L19 595
 LOT 9 AND LOT14 SEC 19-T5S-R95W
 GARFIELD COUNTY, COLORADO
 CAERUS OIL AND GAS, LLC



TABLE 1
SOIL LABORATORY RESULTS SUMMARY TABLE

L19-595
GARFIELD COUNTY, COLORADO
CAERUS OIL GAS, LLC

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	CONFIRMATION SOIL SAMPLES										
			20191105-L19-595 (SB01) 20-21.5'	20191105-L19-595 (SB01) 35-36.5'	20191105-L19-595 (SB02) 15-16.5'	20191105-L19-595 (SB02) 30-31.5'	20191106-L19-595 (SB03) 15-16.5'	20191106-L19-595 (SB03) 20-21.5'	20191106-L19-595 (SB03) 25-26.5'	20191106-L19-595 (SB04) 15-16.5'	20191106-L19-595 (SB04) 20-21.5'	20191106-L19-595 (SB05) 15-16.5'	20191106-L19-595 (SB05) 20-21.5'
Sample Date			11/5/2019	11/5/2019	11/5/2019	11/5/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019
Sample Depth Range		FEET	20-21.5	35-36.5	15-16.5'	30-31.5	15-16.5	20-21.5	25-26.5	15-16.5'	20-21.5	15.16.5	20-21.5
Arsenic	0.39	mg/kg	16	33	18	22	18	25	29	24	21	17	26
Barium	15,000	mg/kg	380	460	420	440	580	440	390	510	390	420	350
Cadmium	70	mg/kg	0.67	0.26	0.46	0.25	0.30	0.23	0.24	0.34	0.23	0.57	0.32
Chromium (III)	120,000	mg/kg	29	24	27	22	30	23	22	26	25	29	22
Chromium (VI)	23	mg/kg	ND	ND	ND	ND	ND	1.1	ND	ND	ND	1.1	ND
Copper	3,100	mg/kg	28	27	26	20	22	24	24	27	21	28	31
Lead	400	mg/kg	23	19	22	18	20	17	17	21	16	23	17
Mercury	23	mg/kg	0.017	0.011	0.021	0.011	0.032	0.012	0.031	0.036	0.030	0.037	0.030
Nickel	1,600	mg/kg	21	18	19	15	23	17	15	25	23	27	27
Selenium	390	mg/kg	0.61	0.69	0.92	0.73	0.85	0.62	0.63	0.82	0.52	0.82	1.0
Silver	390	mg/kg	0.084	0.084	0.074	0.068	ND	0.076	0.077	0.094	0.063	0.088	0.054
Zinc	23,000	mg/kg	94	56	61	48	56	50	44	59	51	71	60
EC	4.0	mmhos/cm	0.89	3.4	1.1	10	5.9	13	13	17	14	6.7	10
pH	6 - 9	SU	8.28	7.98	8.52	8.32	8.95	8.00	8.33	7.88	8.21	8.18	7.62
SAR	12	unitless	1.9	0.97	2.3	3.0	29	6.8	6.0	2.4	3.4	12	13
TPH-GRO		mg/kg	2,500	26	1,300	7.0	5,000	160	23	54	74	9,200	410
TPH-DRO		mg/kg	1,300	55	850	29	1,200	92	6.6	23	8.6	1,800	44
TPH	500	mg/kg	3,800	81	2,150	36	6,200	252	29.6	77	82.6	11,000	454
Benzene	0.17	mg/kg	0.65	ND	0.41	0.053	0.10	ND	ND	ND	ND	0.22	ND
Toluene	85	mg/kg	24	0.044	2.0	0.081	0.70	0.057	ND	0.10	ND	1.7	0.15
Ethylbenzene	100	mg/kg	16	0.018	2.0	0.025	3.2	0.11	ND	0.058	ND	3.7	0.30
Total Xylenes	175	mg/kg	210	0.20	72	0.21	160	1.5	0.42	0.45	0.18	420	4.9
Acenaphthene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	0.22	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	0.22	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	2.2	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.022	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	22	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.022	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	1000	mg/kg	0.055	ND	0.038	ND	0.061	ND	ND	ND	ND	0.11	ND
Indeno(1,2,3,C,D)pyrene	0.22	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	23	mg/kg	1.3	ND	0.80	ND	1.2	0.018	ND	ND	ND	3.3	0.079
Pyrene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:
ND - analyte not detected above the stated reporting limit
COGCC - Colorado Oil and Gas Conservation Commission
BOLD - indicates result exceeds the COGCC concentration level
EC- electrical conductivity
mmhos/cm - millimhos per centimeter
NA - not analyzed
SU - standard unit
mg/kg - milligrams per kilogram
SAR - sodium adsorption ratio



TABLE 1
SOIL LABORATORY RESULTS SUMMARY TABLE

L19-595
GARFIELD COUNTY, COLORADO
CAERUS OIL GAS, LLC

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	CONFIRMATION SOIL SAMPLES										
			20191106-L19-595 (SB05) 25-26.5'	20191107-L19-595 (SB06) 20-21.5'	20191107-L19-595 (SB06) 25-26.5'	20191107-L19-595 (SB07) 20-21.5'	20191107-L19-595 (SB07) 25-26.5'	20191107-L19-595 (SB08) 20-21.5'	20191107-L19-595 (SB08) 25-26.5'	20191113-L19-595 (SB09) 20-21.5'	20191113-L19-595 (SB09) 35-36.5'	20191113-L19-595 (SB10) 20-21.5'	20191113-L19-595 (SB10) 25-26.5'
Sample Date			11/6/2019	11/7/2019	11/7/2019	11/7/2019	11/7/2019	11/7/2019	11/7/2019	11/13/2019	11/13/2019	11/13/2019	11/13/2019
Sample Depth Range		FEET	25.26.5	20-21.5	25-26.5'	20-21.5'	25-26.5'	20-21.5'	25-26.5'	20-21.5'	35-36.5'	20-21.5'	35-36.5'
Arsenic	0.39	mg/kg	26	35	20	24	27	30	27	31	11	31	26
Barium	15,000	mg/kg	390	460	390	410	510	390	420	490	460	500	520
Cadmium	70	mg/kg	0.58	0.37	0.26	0.29	0.18	0.22	0.34	0.32	0.33	0.24	0.21
Chromium (III)	120,000	mg/kg	26	22	25	27	20	21	22	21	23	24	27
Chromium (VI)	23	mg/kg	ND	1.1	1.1	1.1	ND	ND	ND	1.1	ND	ND	ND
Copper	3,100	mg/kg	22	23	19	21	23	25	24	34	30	31	33
Lead	400	mg/kg	20	20	19	17	16	17	18	21	22	19	21
Mercury	23	mg/kg	0.030	0.034	0.025	0.025	0.024	0.021	0.073	0.025	0.015	0.022	0.019
Nickel	1,600	mg/kg	19	22	23	17	19	17	22	25	23	18	24
Selenium	390	mg/kg	0.72	1.5	1.0	0.76	1.0	0.50	0.57	0.69	0.90	0.52	0.50
Silver	390	mg/kg	0.083	0.069	0.071	0.078	0.064	0.075	0.070	0.083	ND	0.076	0.073
Zinc	23,000	mg/kg	50	54	53	48	43	52	52	55	65	54	58
EC	4.0	mmhos/cm	7.8	17	19	3.8	11	0.29	0.34	0.071	0.34	0.031	0.049
pH	6 - 9	SU	8.15	7.95	8.13	8.94	8.30	8.51	8.43	8.75	8.18	9.08	8.94
SAR	12	unitless	24	2.9	1.9	16	3.7	4.0	4.8	2.2	1.5	2.5	3.3
TPH-GRO		mg/kg	160	ND	28	15	13	6.6	9.4	ND	ND	ND	ND
TPH-DRO		mg/kg	33	7.3	7.4	ND	ND	18	ND	17	13	7.0	ND
TPH	500	mg/kg	193	7.3	35.4	15	13	24.6	9.4	17	13	7.0	ND
Benzene	0.17	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	85	mg/kg	ND	0.024	0.073	ND	ND	0.014	ND	ND	ND	ND	ND
Ethylbenzene	100	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.011	ND	0.010	ND
Total Xylenes	175	mg/kg	0.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	0.22	mg/kg	ND	ND	ND	ND	ND	0.021	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	0.22	mg/kg	ND	ND	ND	ND	ND	0.015	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	2.2	mg/kg	ND	ND	ND	ND	ND	0.0048	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.022	mg/kg	ND	ND	ND	ND	ND	0.0093	ND	ND	ND	ND	ND
Chrysene	22	mg/kg	ND	ND	ND	ND	ND	0.030	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.022	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	1000	mg/kg	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND
Fluorene	1000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,C,D)pyrene	0.22	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	23	mg/kg	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	1000	mg/kg	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND

NOTES:
ND - analyte not detected above the stated reporting limit
COGCC - Colorado Oil and Gas Conservation Commission
BOLD - indicates result exceeds the COGCC concentration le
EC- electrical conductivity
mmhos/cm - millimhos per centimeter
NA - not analyzed
SU - standard unit
mg/kg - milligrams per kilogram
SAR - sodium adsorption ratio







Compliance • Engineering • Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-01/SVE-01
COMPLETION DATE: 11/5/2019
TD (ft bgs): 36.5'
DTW (ft bgs): NA
SCREEN SLOT: 0.010
CASING LENGTH: 10'
SCREEN LENGTH: 28'

LOGGED BY: Brittany Cocina
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: 10/20
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Sakrete

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
713.6	Red	Dry	SB-01 @ 20-21.5'	1.5	10	GC	[Symbol]	10.0-11.5' - brown to black SILT with CLAY with fractured gravel-sized blue gray SHALE. Staining and odor present.	[Well Construction Diagram]
>15,000	Red	Dry		1.5	15	GC	[Symbol]	15.0-16.5' - Top 4" is black, SILT with CLAY with fractured shale at top 4". Last 10" is brown SILT with CLAY with lenses of fractured SHALE. Strong odor and no staining.	
>15,000	Red	Dry		1.5	20	GW	[Symbol]	20.0-21.5' - Brown to dark brown SAND with fractured shale. No staining with strong odor. @ 21.0' light gray fractured SHALE with odor and staining.	
169.7	Red	Dry		1.5	25	GW	[Symbol]	25.0-26.5' - Only 4" recovered. Dark brown SAND with gravel-sized fractured SHALE. No odor or staining.	
139.4	Red	Dry	SB-01 @ 35-36.5'	1.5	30	GW	[Symbol]	30.0-31.5' - Brown SAND with gravel-sized fractured SHALE. No odor or staining.	
11.9		Dry		1.5	35	GC	[Symbol]	35.0-36.5' - Brown to reddish brown CLAYEY SAND with coarse gravel-sized fractured SHALE. No odor or staining. Small <1" staining. Low plasticity.	



Compliance • Engineering • Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-02/SVE-02
COMPLETION DATE: 11/5/2019
TD (ft bgs): 31.5'
DTW (ft bgs): NA
SCREEN SLOT: 0.010
CASING LENGTH: 10'
SCREEN LENGTH: 23.5'

LOGGED BY: Brittany Cocina
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: 10/20
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Sakrete

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1,193	Red	Dry	SB-02 @ 15-16.5'	1.5	10	GC		10.0-11.5' - Light to dark brown CLAYEY SAND with coarse gravel-sized SHALE. Staining @ 11-11.5' and odor present.	
5,137	Red	Dry		1.5	15	GC		15.0-16.5' - Brown CLAYEY SAND with SILT and coarse gravel-sized SHALE. Some staining @ top and odor present.	
159.7		Dry		1.5	20	GC		20.0-21.5' - Brown to light brown same as above. No odor or staining.	
22.8		Dry	SB-02 @ 30-31.5'	1.5	25	GC		25.0-26.5' - Same as above. Less consolidated. Moisture present in top 3".	
13.8	Red	Dry		1.5	30	GM		30.0-31.5' - Dark brown SAND with SILT and gravel-sized fractured SHALE. No odor and some staining throughout.	
					35				



Compliance • Engineering • Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-03/SVE-03
COMPLETION DATE: 11/5/2019
TD (ft bgs): 26.5'
DTW (ft bgs): NA
SCREEN SLOT: 0.010
CASING LENGTH: 6.5'
SCREEN LENGTH: 20'
LOGGED BY: Brittany Cocina
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: 10/20
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Sakrete

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0				
					5				
>15,000	Red	Dry		1.5	10	GC		10.0-11.5' - Reddish brown to black SILT with CLAY and fine to coarse gravel-sized SHALE. Staining and odor present.	
>15,000	Red	Dry	SB-03 @ 15-16.5'	1.5	15	GM		15.0-16.5' - Reddish brown to dark brown SILTY SANDS and fine to coarse-grained SHALE. Small lenses of clayey sands found throughout. Odor and some staining present.	
95.6		Dry	SB-03 @ 20-21.5'	1.5	20	SC		20.0-21.5' - Brown to dark brown CLAYEY SANDS with fine to coarse-grained SHALE throughout. No staining or odor.	
28.4		Dry	SB-03 @ 25-25.5'	1.5	25	GM		25.0-26.5' - Light brown to brown SILTY SANDS with fine to coarse-grained SHALE. No staining or odor present.	
					30				



Compliance • Engineering • Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"

WELL DIAMETER: NA

CASING TYPE: NA

SCREEN TYPE: NA

PROJECT NAME: L19-595

PROJECT NO: 050819021

BORING/WELL ID: SB-04

COMPLETION DATE: 11/6/2019

TD (ft bgs): 21.5'

DTW (ft bgs): NA

SCREEN SLOT: NA

CASING LENGTH: NA

SCREEN LENGTH: NA

LOGGED BY: Brittany Cocina

SAMPLE METHOD: Split Spoon

DRILL METHOD: Hollow Stem

DRILLED BY: Dakota Drilling

DETECTOR: MiniRAE 3000

FILTER PACK: NA

ANNULUS SEAL: Bentonite Chips

SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
4.2		Dry		1.5	10	SM		10.0-11.5' - Light brown to brown SILTY SAND with coarse gravel-sized fracture SHALE throughout. No staining or odor.	
4.0		Dry	SB-04 @ 15-16.5'	1.5	15	SC		15.0-16.5' - Brown to black fine-grained CLAYEY SAND with coarse-grained fractured SHALE. Staining present @ top 3". No odor.	
2.4		Dry	SB-04 @ 20-21.5'	1.5	20	SM		20.0-21.5' - Brown to reddish brown SILTY SAND and coarse-grained fractured SHALE throughout. No staining or odor present.	



Compliance • Engineering • Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-05/SVE-05
COMPLETION DATE: 11/6/2019
TD (ft bgs): 26.5'
DTW (ft bgs): NA
SCREEN SLOT: 0.010
CASING LENGTH: 6.5'
SCREEN LENGTH: 20'
LOGGED BY: Brittany Cocina
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: 10/20
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Sakrete

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0				
					5				
>15,000	Red	Dry		1.5	10	GC		10.0-11.5' - Light brown to brown CLAYEY SAND with coarse-grained gravel sized SHALE throughout. Staining and odor.	
>15,000	Red	Dry	SB-05 @ 15-16.5'	1.5	15	GC		15.0-16.5' - Same as above. Staining and odor.	
62.3		Dry	SB-05 @ 20-21.5'	1.5	20	GC		20.0-21.5' - Brown SILT with CLAY and coarse-grained gravel-sized SHALE. No odor or staining.	
31.2		Dry	SB-05 @ 25-26.5'	1.5	25	GP		25.0-26.5' - Brown to reddish brown SAND with coarse-grained gravel sized SHALE. No odor or staining.	
					30				



Compliance • Engineering • Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-06
COMPLETION DATE: 11/7/2019
TD (ft bgs): 26.5'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Evan Mason
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.4		Dry		1.5	10	GM		10.0-11.5' - Light brown SILTY SAND with coarse gravel-sized fractured SHALE throughout. No staining or odor.	
0.5		Dry		1.5	15	GM		15.0-16.5' - Same as above.	
0.7		Dry	SB-06 @ 20-21.5'	1.5	20	GM		20.0-21.5' - Brown SILTY SAND with coarse to fine gravel-sized fractured SHALE throughout. Staining no odor.	
0.4		Dry	SB-06 @ 25-26.5'	1.5	25	GM		25.0-26.5' - Same as above.	
					30				



Compliance • Engineering • Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-07
COMPLETION DATE: 11/7/2019
TD (ft bgs): 26.5'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Evan Mason
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.0		Dry		1.5	10	GM		10.0-11.5' - Dark brown to brown SILTY SANDS with fine to coarse gravel-sized fractured SHALE throughout. Staining present. No odor.	
1.5		Dry		1.5	15	GC		15.0-16.5' - Dark brown CLAYEY SANDS with fine gravel-sized fractured SHALE throughout. Staining, no odor.	
1.0		Dry	SB-07 @ 20-21.5'	1.5	20	GP		20.0-21.5' - Dark brown SAND with coarse gravel-sized fractured SHALE throughout. No staining or odor.	
0.9		Dry	SB-07 @ 25-26.5'	1.5	25	GP		25.0-26.5' - Light brown SAND with fingravel-sized fractured SHALE throughout. Staining, no odor.	



Compliance • Engineering • Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-08
COMPLETION DATE: 11/7/2019
TD (ft bgs): 26.5'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Evan Mason
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.2		Dry	SB-08 @ 20-21.5'	1.5	10	GC		10.0-11.5' - Dark to light brown SILT with CLAY and coarse to fine-grained fractured SHALE throughout. Staining, no odor.	
0.4		Dry		1.5	15	GP		15.0-16.5' - Brown to reddish brown gravelly SANDS with coarse gravel-sized fractured SHALE. Staining, no odor.	
0.8		Dry		1.5	20	GP		20.0-21.5' - Same as above.	
0.0		Dry	SB-08 @ 25-26.5'	1.5	25	GM		25.0-26.5' - Brown silty SANDS with coarse to fine-grained fractured SHALE throughout. No staining or odor.	
					30				



Compliance • Engineering • Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-09
COMPLETION DATE: 11/13/2019
TD (ft bgs): 36.5'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Dustin Held
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.6		Moist		1.5	15	GM		15.0-16.5' - Brown, poorly-graded GRAVEL with SILT with trace sands and few clays. Non-plastic and moist.	
0.1		Moist	SB-09 @ 20-21.5'	1.5	20	GM		20.0-21.5' - Same as above.	
0.0		Moist		1.5	25	GM		25.0-26.5' - Same as above. Calcite nodules present.	
0.0		Moist		1.5	30	GM		30-31.5' - Same as above.	
0.1		Moist	SB-09 @ 35-36.5'	1.5	35	GM		35-36.5' - Same as above.	



Compliance • Engineering • Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PROJECT NAME: L19-595
PROJECT NO: 050819021
BORING/WELL ID: SB-10
COMPLETION DATE: 11/13/2019
TD (ft bgs): 26.5'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Dustin Held
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem
DRILLED BY: Dakota Drilling
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.1		Moist		1.5	15	GM		15.0-16.5' - Brown gravelly SHALE with SILT and trace sands. Non-plastic and non-cohesive.	
0.0		Moist	SB-10 @ 20-21.5'	1.5	20	GM		20.0-21.5' - Brown SILT with GRAVEL, trace sands. Non-plastic and non-cohesive.	
0.0		Moist	SB-10 @ 25-26.5'	1.5	25	GM		25.0-26.5' - Brown gravelly SHALE with SILT and trace sands. Non-plastic and non-cohesive.	
					30				





13-Nov-2019

Jake Janicek
Caerus Oil and Gas LLC
143 Diamond Ave.
Parachute, CO 81635

Re: **L19-595 Assessment**

Work Order: **19110373**

Dear Jake,

ALS Environmental received 4 samples on 06-Nov-2019 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland 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 29.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

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: L19-595 Assessment
Work Order: 19110373

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>
19110373-01	20191105-L19-595 (SB-01) 20-21.5'	Soil		11/5/2019 10:47	11/6/2019 10:00	<input type="checkbox"/>
19110373-02	20191105-L19-595 (SB-01) 35-36.5'	Soil		11/5/2019 11:40	11/6/2019 10:00	<input type="checkbox"/>
19110373-03	20191105-L19-595 (SB-02) 15-16.5'	Soil		11/5/2019 13:50	11/6/2019 10:00	<input type="checkbox"/>
19110373-04	20191105-L19-595 (SB-02) 30-31.5'	Soil		11/5/2019 14:27	11/6/2019 10:00	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Work Order: 19110373

Case Narrative

Batch 145195, Method VOC_8260_S, Sample 19110373-01A: VOC surrogate recovery high due to matrix interference.

Batch 145197, Method GRO_8015_S, Samples 19110373-01A and -03A: GRO surrogate recoveries high due to matrix interference.

Batch 145251, Method ICP_6020_S, Sample 19110373-04A MS/MSD: The MS/MSD recovery was outside of the control limit for Barium; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required.

<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
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
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
°C	Degrees Celcius
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: 13-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191105-L19-595 (SB-01) 20-21.5'
Collection Date: 11/5/2019 10:47 AM

Work Order: 19110373
Lab ID: 19110373-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/6/19		Analyst: BCM
DRO (C10-C28)	1,300		3.2	5.7	mg/Kg-dry	1	11/7/2019 03:18
Surr: 4-Terphenyl-d14	73.3			33-111	%REC	1	11/7/2019 03:18
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/6/19		Analyst: BCM
GRO (C6-C10)	2,500		2.5	6.0	mg/Kg	1	11/7/2019 06:01
Surr: Toluene-d8	279	S		71-123	%REC	1	11/7/2019 06:01
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/7/19		Analyst: RSB
Mercury	0.017	J	0.0018	0.018	mg/Kg-dry	1	11/7/2019 15:34
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/7/19		Analyst: STP
Arsenic	16		0.050	0.42	mg/Kg-dry	1	11/7/2019 20:10
Barium	380		3.8	4.2	mg/Kg-dry	10	11/8/2019 12:07
Cadmium	0.67		0.025	0.17	mg/Kg-dry	1	11/7/2019 20:10
Chromium	29		0.18	0.42	mg/Kg-dry	1	11/7/2019 20:10
Copper	28		0.42	0.42	mg/Kg-dry	1	11/7/2019 20:10
Lead	23		0.20	0.42	mg/Kg-dry	1	11/7/2019 20:10
Nickel	21		0.22	0.42	mg/Kg-dry	1	11/7/2019 20:10
Selenium	0.61		0.38	0.42	mg/Kg-dry	1	11/7/2019 20:10
Silver	0.084	J	0.055	0.42	mg/Kg-dry	1	11/7/2019 20:10
Zinc	94		0.82	0.83	mg/Kg-dry	1	11/7/2019 20:10
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Calcium	33		2.5	5.0	mg/L	10	11/8/2019 18:27
Magnesium	45		0.50	2.0	mg/L	10	11/8/2019 18:27
Sodium	70		0.45	2.0	mg/L	10	11/8/2019 18:27
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Sodium Adsorption Ratio	1.9		0.010	0.010	none	1	11/8/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/6/19		Analyst: EEW
Acenaphthene	U		0.00091	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Anthracene	U		0.0016	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Benzo(a)anthracene	U		0.0019	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Benzo(a)pyrene	U		0.0013	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Benzo(b)fluoranthene	U		0.0011	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Benzo(k)fluoranthene	U		0.0014	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Chrysene	U		0.00097	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Dibenzo(a,h)anthracene	U		0.0011	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Fluoranthene	U		0.00087	0.0047	mg/Kg-dry	1	11/7/2019 13:55

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191105-L19-595 (SB-01) 20-21.5'
Collection Date: 11/5/2019 10:47 AM

Work Order: 19110373
Lab ID: 19110373-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.055		0.0016	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Naphthalene	1.3		0.0021	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Pyrene	U		0.00078	0.0047	mg/Kg-dry	1	11/7/2019 13:55
Surr: 2-Fluorobiphenyl	72.2			20-140	%REC	1	11/7/2019 13:55
Surr: 4-Terphenyl-d14	55.8			22-172	%REC	1	11/7/2019 13:55
Surr: Nitrobenzene-d5	75.2			28-140	%REC	1	11/7/2019 13:55
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/6/19		Analyst: SJB
Benzene	0.65		0.0048	0.028	mg/Kg-dry	1	11/7/2019 02:14
Ethylbenzene	16		0.15	0.72	mg/Kg-dry	20	11/7/2019 14:04
m,p-Xylene	180		0.96	1.4	mg/Kg-dry	20	11/7/2019 14:04
o-Xylene	32		0.28	0.72	mg/Kg-dry	20	11/7/2019 14:04
Toluene	24		0.20	0.72	mg/Kg-dry	20	11/7/2019 14:04
Xylenes, Total	210		0.96	2.1	mg/Kg-dry	20	11/7/2019 14:04
Surr: 1,2-Dichloroethane-d4	96.8			70-130	%REC	1	11/7/2019 02:14
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	20	11/7/2019 14:04
Surr: 4-Bromofluorobenzene	133	S		70-130	%REC	1	11/7/2019 02:14
Surr: 4-Bromofluorobenzene	98.3			70-130	%REC	20	11/7/2019 14:04
Surr: Dibromofluoromethane	85.6			70-130	%REC	1	11/7/2019 02:14
Surr: Dibromofluoromethane	94.6			70-130	%REC	20	11/7/2019 14:04
Surr: Toluene-d8	151	S		70-130	%REC	1	11/7/2019 02:14
Surr: Toluene-d8	105			70-130	%REC	20	11/7/2019 14:04
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: QTN
Electrical Conductivity @ Saturation	0.89		0.011	0.10	mmhos/cm @25°	20	11/11/2019 15:31
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	29		0.35	1.1	mg/Kg-dry	1	11/8/2019 10:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/7/19		Analyst: RZM
Chromium, Hexavalent	U		0.97	1.1	mg/Kg-dry	1	11/7/2019 16:05
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	12		0.10	0.10	% of sample	1	11/6/2019 13:21
PH			Method: SW9045D		Prep: EXTRACT / 11/7/19		Analyst: DNW
pH	8.28		0.10	0.100	s.u.	1	11/8/2019 09:00
Temperature	21.2		0.10	0.100	°C	1	11/8/2019 09:00

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191105-L19-595 (SB-01) 35-36.5'
Collection Date: 11/5/2019 11:40 AM

Work Order: 19110373
Lab ID: 19110373-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/6/19		Analyst: BCM
DRO (C10-C28)	55		3.5	6.2	mg/Kg-dry	1	11/7/2019 03:47
<i>Surr: 4-Terphenyl-d14</i>	60.4			33-111	%REC	1	11/7/2019 03:47
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/6/19		Analyst: BCM
GRO (C6-C10)	26		3.4	8.0	mg/Kg	1	11/7/2019 06:30
<i>Surr: Toluene-d8</i>	91.0			71-123	%REC	1	11/7/2019 06:30
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/7/19		Analyst: RSB
Mercury	0.011	J	0.0024	0.024	mg/Kg-dry	1	11/7/2019 15:36
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/7/19		Analyst: STP
Arsenic	33		0.061	0.50	mg/Kg-dry	1	11/7/2019 20:11
Barium	460		4.6	5.0	mg/Kg-dry	10	11/8/2019 12:09
Cadmium	0.26		0.030	0.20	mg/Kg-dry	1	11/7/2019 20:11
Chromium	24		0.22	0.50	mg/Kg-dry	1	11/7/2019 20:11
Copper	27		0.50	0.50	mg/Kg-dry	1	11/7/2019 20:11
Lead	19		0.24	0.50	mg/Kg-dry	1	11/7/2019 20:11
Nickel	18		0.26	0.50	mg/Kg-dry	1	11/7/2019 20:11
Selenium	0.69		0.46	0.50	mg/Kg-dry	1	11/7/2019 20:11
Silver	0.084	J	0.067	0.50	mg/Kg-dry	1	11/7/2019 20:11
Zinc	56		0.99	1.0	mg/Kg-dry	1	11/7/2019 20:11
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Calcium	130		2.5	5.0	mg/L	10	11/8/2019 18:28
Magnesium	220		0.50	2.0	mg/L	10	11/8/2019 18:28
Sodium	78		0.45	2.0	mg/L	10	11/8/2019 18:28
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Sodium Adsorption Ratio	0.97		0.010	0.010	none	1	11/8/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/6/19		Analyst: EEW
Acenaphthene	U		0.0010	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Anthracene	U		0.0017	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Benzo(a)anthracene	U		0.0021	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Benzo(a)pyrene	U		0.0014	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Benzo(b)fluoranthene	U		0.0012	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Benzo(k)fluoranthene	U		0.0015	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Chrysene	U		0.0011	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Dibenzo(a,h)anthracene	U		0.0012	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Fluoranthene	U		0.00095	0.0052	mg/Kg-dry	1	11/7/2019 14:11

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191105-L19-595 (SB-01) 35-36.5'
Collection Date: 11/5/2019 11:40 AM

Work Order: 19110373
Lab ID: 19110373-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Indeno(1,2,3-cd)pyrene	U		0.0019	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Naphthalene	U		0.0023	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Pyrene	U		0.00086	0.0052	mg/Kg-dry	1	11/7/2019 14:11
Surr: 2-Fluorobiphenyl	59.5			20-140	%REC	1	11/7/2019 14:11
Surr: 4-Terphenyl-d14	43.9			22-172	%REC	1	11/7/2019 14:11
Surr: Nitrobenzene-d5	61.5			28-140	%REC	1	11/7/2019 14:11
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/6/19		Analyst: SJB
Benzene	U		0.0082	0.048	mg/Kg-dry	1	11/7/2019 13:17
Ethylbenzene	0.018	J	0.010	0.048	mg/Kg-dry	1	11/7/2019 13:17
m,p-Xylene	0.17		0.064	0.096	mg/Kg-dry	1	11/7/2019 13:17
o-Xylene	0.032	J	0.019	0.048	mg/Kg-dry	1	11/7/2019 13:17
Toluene	0.044	J	0.013	0.048	mg/Kg-dry	1	11/7/2019 13:17
Xylenes, Total	0.20		0.064	0.14	mg/Kg-dry	1	11/7/2019 13:17
Surr: 1,2-Dichloroethane-d4	99.2			70-130	%REC	1	11/7/2019 13:17
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	11/7/2019 13:17
Surr: Dibromofluoromethane	91.9			70-130	%REC	1	11/7/2019 13:17
Surr: Toluene-d8	98.2			70-130	%REC	1	11/7/2019 13:17
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: QTN
Electrical Conductivity @ Saturation	3.4		0.011	0.10	mmhos/cm @25°	20	11/11/2019 15:31
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	24		0.39	1.3	mg/Kg-dry	1	11/8/2019 10:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/7/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/7/2019 16:05
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	21		0.10	0.10	% of sample	1	11/6/2019 13:21
PH			Method: SW9045D		Prep: EXTRACT / 11/7/19		Analyst: DNW
pH	7.98		0.10	0.100	s.u.	1	11/8/2019 09:00
Temperature	21.2		0.10	0.100	°C	1	11/8/2019 09:00

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191105-L19-595 (SB-02) 15-16.5'
 Collection Date: 11/5/2019 01:50 PM

Work Order: 19110373
 Lab ID: 19110373-03
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/6/19		Analyst: BCM
DRO (C10-C28)	850		3.3	5.7	mg/Kg-dry	1	11/7/2019 04:17
Surr: 4-Terphenyl-d14	71.6			33-111	%REC	1	11/7/2019 04:17
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/6/19		Analyst: BCM
GRO (C6-C10)	1,300		2.8	6.8	mg/Kg	1	11/7/2019 06:59
Surr: Toluene-d8	244	S		71-123	%REC	1	11/7/2019 06:59
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/7/19		Analyst: RSH
Mercury	0.021	J	0.0021	0.021	mg/Kg-dry	1	11/7/2019 15:38
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/7/19		Analyst: STP
Arsenic	18		0.044	0.37	mg/Kg-dry	1	11/7/2019 20:13
Barium	420		3.4	3.7	mg/Kg-dry	10	11/8/2019 12:11
Cadmium	0.46		0.022	0.15	mg/Kg-dry	1	11/7/2019 20:13
Chromium	27		0.16	0.37	mg/Kg-dry	1	11/7/2019 20:13
Copper	26		0.37	0.37	mg/Kg-dry	1	11/7/2019 20:13
Lead	22		0.18	0.37	mg/Kg-dry	1	11/7/2019 20:13
Nickel	19		0.19	0.37	mg/Kg-dry	1	11/7/2019 20:13
Selenium	0.92		0.34	0.37	mg/Kg-dry	1	11/7/2019 20:13
Silver	0.074	J	0.049	0.37	mg/Kg-dry	1	11/7/2019 20:13
Zinc	61		0.72	0.74	mg/Kg-dry	1	11/7/2019 20:13
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Calcium	29		2.5	5.0	mg/L	10	11/8/2019 18:30
Magnesium	53		0.50	2.0	mg/L	10	11/8/2019 18:30
Sodium	89		0.45	2.0	mg/L	10	11/8/2019 18:30
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Sodium Adsorption Ratio	2.3		0.010	0.010	none	1	11/8/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/6/19		Analyst: EEW
Acenaphthene	U		0.00092	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Anthracene	U		0.0016	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Benzo(a)anthracene	U		0.0020	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Benzo(a)pyrene	U		0.0013	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Benzo(b)fluoranthene	U		0.0011	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Benzo(k)fluoranthene	U		0.0014	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Chrysene	U		0.00098	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Dibenzo(a,h)anthracene	U		0.0011	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Fluoranthene	U		0.00088	0.0048	mg/Kg-dry	1	11/7/2019 14:26

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191105-L19-595 (SB-02) 15-16.5'
Collection Date: 11/5/2019 01:50 PM

Work Order: 19110373
Lab ID: 19110373-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.038		0.0016	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Naphthalene	0.80		0.0021	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Pyrene	U		0.00079	0.0048	mg/Kg-dry	1	11/7/2019 14:26
Surr: 2-Fluorobiphenyl	63.9			20-140	%REC	1	11/7/2019 14:26
Surr: 4-Terphenyl-d14	47.3			22-172	%REC	1	11/7/2019 14:26
Surr: Nitrobenzene-d5	64.4			28-140	%REC	1	11/7/2019 14:26
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/6/19		Analyst: SJB
Benzene	0.41		0.0054	0.032	mg/Kg-dry	1	11/7/2019 02:48
Ethylbenzene	2.0		0.0067	0.032	mg/Kg-dry	1	11/7/2019 02:48
m,p-Xylene	52		1.1	1.6	mg/Kg-dry	20	11/7/2019 15:36
o-Xylene	4.5		0.012	0.032	mg/Kg-dry	1	11/7/2019 02:48
Toluene	2.0		0.0086	0.032	mg/Kg-dry	1	11/7/2019 02:48
Xylenes, Total	72		1.1	2.4	mg/Kg-dry	20	11/7/2019 15:36
Surr: 1,2-Dichloroethane-d4	92.6			70-130	%REC	1	11/7/2019 02:48
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	20	11/7/2019 15:36
Surr: 4-Bromofluorobenzene	109			70-130	%REC	1	11/7/2019 02:48
Surr: 4-Bromofluorobenzene	95.5			70-130	%REC	20	11/7/2019 15:36
Surr: Dibromofluoromethane	81.0			70-130	%REC	1	11/7/2019 02:48
Surr: Dibromofluoromethane	94.4			70-130	%REC	20	11/7/2019 15:36
Surr: Toluene-d8	122			70-130	%REC	1	11/7/2019 02:48
Surr: Toluene-d8	104			70-130	%REC	20	11/7/2019 15:36
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: QTN
Electrical Conductivity @ Saturation	1.1		0.011	0.10	mmhos/cm @25°	20	11/11/2019 15:31
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	27		0.35	1.1	mg/Kg-dry	1	11/8/2019 10:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/7/19		Analyst: RZM
Chromium, Hexavalent	U		0.97	1.1	mg/Kg-dry	1	11/7/2019 16:05
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	13		0.10	0.10	% of sample	1	11/6/2019 13:21
PH			Method: SW9045D		Prep: EXTRACT / 11/7/19		Analyst: DNW
pH	8.52		0.10	0.100	s.u.	1	11/8/2019 09:00
Temperature	21.4		0.10	0.100	°C	1	11/8/2019 09:00

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191105-L19-595 (SB-02) 30-31.5
 Collection Date: 11/5/2019 02:27 PM

Work Order: 19110373
 Lab ID: 19110373-04
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/6/19		Analyst: BCM
DRO (C10-C28)	29		3.4	6.0	mg/Kg-dry	1	11/7/2019 04:46
Surr: 4-Terphenyl-d14	53.9			33-111	%REC	1	11/7/2019 04:46
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/6/19		Analyst: BCM
GRO (C6-C10)	7.0	J	3.2	7.6	mg/Kg	1	11/7/2019 07:28
Surr: Toluene-d8	90.5			71-123	%REC	1	11/7/2019 07:28
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/7/19		Analyst: RSH
Mercury	0.011	J	0.0020	0.020	mg/Kg-dry	1	11/7/2019 15:40
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/7/19		Analyst: STP
Arsenic	22		0.058	0.48	mg/Kg-dry	1	11/7/2019 17:11
Barium	440		4.5	4.8	mg/Kg-dry	10	11/7/2019 19:41
Cadmium	0.25		0.029	0.19	mg/Kg-dry	1	11/7/2019 17:11
Chromium	22		0.21	0.48	mg/Kg-dry	1	11/7/2019 17:11
Copper	20		0.48	0.48	mg/Kg-dry	1	11/7/2019 17:11
Lead	18		0.23	0.48	mg/Kg-dry	1	11/7/2019 17:11
Nickel	15		0.25	0.48	mg/Kg-dry	1	11/7/2019 17:11
Selenium	0.73		0.45	0.48	mg/Kg-dry	1	11/7/2019 17:11
Silver	0.068	J	0.064	0.48	mg/Kg-dry	1	11/7/2019 17:11
Zinc	48		0.95	0.97	mg/Kg-dry	1	11/7/2019 17:11
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Calcium	460		2.5	5.0	mg/L	10	11/8/2019 18:32
Magnesium	670		0.50	2.0	mg/L	10	11/8/2019 18:32
Sodium	440		0.45	2.0	mg/L	10	11/8/2019 18:32
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: STP
Sodium Adsorption Ratio	3.0		0.010	0.010	none	1	11/8/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/6/19		Analyst: EEW
Acenaphthene	U		0.00097	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Anthracene	U		0.0017	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Benzo(a)anthracene	U		0.0021	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Benzo(a)pyrene	U		0.0014	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Benzo(b)fluoranthene	U		0.0012	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Benzo(k)fluoranthene	U		0.0015	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Chrysene	U		0.0010	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Dibenzo(a,h)anthracene	U		0.0012	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Fluoranthene	U		0.00092	0.0050	mg/Kg-dry	1	11/7/2019 14:42

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

ALS Group, USA

Date: 13-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191105-L19-595 (SB-02) 30-31.5
Collection Date: 11/5/2019 02:27 PM

Work Order: 19110373
Lab ID: 19110373-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Naphthalene	U		0.0022	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Pyrene	U		0.00082	0.0050	mg/Kg-dry	1	11/7/2019 14:42
Surr: 2-Fluorobiphenyl	86.5			20-140	%REC	1	11/7/2019 14:42
Surr: 4-Terphenyl-d14	63.5			22-172	%REC	1	11/7/2019 14:42
Surr: Nitrobenzene-d5	81.9			28-140	%REC	1	11/7/2019 14:42
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/6/19		Analyst: SJB
Benzene	0.053		0.0078	0.046	mg/Kg-dry	1	11/7/2019 13:48
Ethylbenzene	0.025	J	0.0096	0.046	mg/Kg-dry	1	11/7/2019 13:48
m,p-Xylene	0.17		0.061	0.091	mg/Kg-dry	1	11/7/2019 13:48
o-Xylene	0.042	J	0.018	0.046	mg/Kg-dry	1	11/7/2019 13:48
Toluene	0.081		0.012	0.046	mg/Kg-dry	1	11/7/2019 13:48
Xylenes, Total	0.21		0.061	0.14	mg/Kg-dry	1	11/7/2019 13:48
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	11/7/2019 13:48
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	11/7/2019 13:48
Surr: Dibromofluoromethane	89.4			70-130	%REC	1	11/7/2019 13:48
Surr: Toluene-d8	99.4			70-130	%REC	1	11/7/2019 13:48
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/8/19		Analyst: QTN
Electrical Conductivity @ Saturation	10		0.011	0.10	mmhos/cm @25°	20	11/11/2019 15:31
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	22		0.38	1.2	mg/Kg-dry	1	11/8/2019 10:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/7/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	11/7/2019 16:05
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	11/6/2019 13:21
PH			Method: SW9045D		Prep: EXTRACT / 11/7/19		Analyst: DNW
pH	8.32		0.10	0.100	s.u.	1	11/8/2019 09:00
Temperature	21.6		0.10	0.100	°C	1	11/8/2019 09:00

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145161** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: SBLKS1-145161-145161				Units: mg/Kg		Analysis Date: 11/6/2019 06:06 PM		
Client ID:		Run ID: GC8_191106A				SeqNo: 6039546		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
Surr: 4-Terphenyl-d14	2.021	0	3.33	0	60.7	33-111		0		

LCS		Sample ID: SLCSS1-145161-145161				Units: mg/Kg		Analysis Date: 11/6/2019 06:35 PM		
Client ID:		Run ID: GC8_191106A				SeqNo: 6039547		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	330.4	5.0	333	0	99.2	58-111		0		
Surr: 4-Terphenyl-d14	1.735	0	3.33	0	52.1	33-111		0		

MS		Sample ID: 19110098-01A MS				Units: mg/Kg		Analysis Date: 11/6/2019 07:04 PM		
Client ID:		Run ID: GC8_191106A				SeqNo: 6039548		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	585.7	5.0	330	349.2	71.7	58-111		0		
Surr: 4-Terphenyl-d14	2.002	0	3.3	0	60.7	33-111		0		

MSD		Sample ID: 19110098-01A MSD				Units: mg/Kg		Analysis Date: 11/6/2019 07:33 PM		
Client ID:		Run ID: GC8_191106A				SeqNo: 6039549		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	664.7	5.0	332.4	349.2	94.9	58-111	585.7	12.6	30	
Surr: 4-Terphenyl-d14	2.091	0	3.324	0	62.9	33-111	2.002	4.35	30	

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145197** Instrument ID **GC8** Method: **SW8015D**

MBLK		Sample ID: MBLK-145197-145197				Units: µg/Kg-dry		Analysis Date: 11/6/2019 10:43 PM		
Client ID:		Run ID: GC8_191106B				SeqNo: 6039749		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	4899	0	5000	0	98	71-123	0			

LCS		Sample ID: LCS-145197-145197				Units: µg/Kg-dry		Analysis Date: 11/6/2019 09:44 PM		
Client ID:		Run ID: GC8_191106B				SeqNo: 6039748		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	567000	5,000	500000	0	113	71-123	0			
Surr: Toluene-d8	5700	0	5000	0	114	71-123	0			

MS		Sample ID: 19110368-02A MS				Units: µg/Kg-dry		Analysis Date: 11/7/2019 05:02 AM		
Client ID:		Run ID: GC8_191106B				SeqNo: 6039759		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	830800	7,100	707200	0	117	71-123	0			
Surr: Toluene-d8	8070	0	7072	0	114	71-123	0			

MSD		Sample ID: 19110368-02A MSD				Units: µg/Kg-dry		Analysis Date: 11/7/2019 05:32 AM		
Client ID:		Run ID: GC8_191106B				SeqNo: 6039760		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	788400	7,100	710600	0	111	71-123	830800	5.24	30	
Surr: Toluene-d8	8252	0	7106	0	116	71-123	8070	2.23	30	

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145241** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-145241-145241				Units: mg/Kg		Analysis Date: 11/7/2019 11:43 AM		
Client ID:		Run ID: HG4_191107A				SeqNo: 6039173		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-145241-145241				Units: mg/Kg		Analysis Date: 11/7/2019 11:52 AM		
Client ID:		Run ID: HG4_191107A				SeqNo: 6039177		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1758 0.020 0.1665 0 106 80-120 0

MS		Sample ID: 19110368-05AMS				Units: mg/Kg		Analysis Date: 11/7/2019 12:07 PM		
Client ID:		Run ID: HG4_191107A				SeqNo: 6039184		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1693 0.017 0.1442 0.01111 110 75-125 0

MSD		Sample ID: 19110368-05AMSD				Units: mg/Kg		Analysis Date: 11/7/2019 12:09 PM		
Client ID:		Run ID: HG4_191107A				SeqNo: 6039185		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1624 0.017 0.1421 0.01111 106 75-125 0.1693 4.15 35

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145251** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK				Sample ID: MBLK-145251-145251				Units: mg/Kg		Analysis Date: 11/7/2019 04:22 PM	
Client ID:			Run ID: ICPMS3_191107B			SeqNo: 6040183		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	U	0.25									
Barium	U	0.25									
Cadmium	U	0.10									
Chromium	U	0.25									
Copper	U	0.25									
Lead	U	0.25									
Nickel	U	0.25									
Selenium	U	0.25									
Silver	U	0.25									
Zinc	U	0.50									

LCS				Sample ID: LCS-145251-145251				Units: mg/Kg			Analysis Date: 11/7/2019 04:23 PM		
Client ID:			Run ID: ICPMS3_191107B			SeqNo: 6040184		Prep Date: 11/7/2019		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Arsenic	4.833	0.25	5	0	96.7	80-120	0						
Barium	4.932	0.25	5	0	98.6	80-120	0						
Cadmium	4.998	0.10	5	0	100	80-120	0						
Chromium	5.054	0.25	5	0	101	80-120	0						
Copper	5.091	0.25	5	0	102	80-120	0						
Lead	5.127	0.25	5	0	103	80-120	0						
Nickel	4.809	0.25	5	0	96.2	80-120	0						
Selenium	4.752	0.25	5	0	95	80-120	0						
Silver	4.976	0.25	5	0	99.5	80-120	0						
Zinc	5.201	0.50	5	0	104	80-120	0						

MS				Sample ID: 19110373-04AMS				Units: mg/Kg		Analysis Date: 11/7/2019 05:13 PM	
Client ID: 20191105-L19-595 (SB-02) 30-31.5			Run ID: ICPMS3_191107B		SeqNo: 6040595		Prep Date: 11/7/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	24.91	0.38	7.519	18.34	87.4	75-125	0				
Cadmium	6.243	0.15	7.519	0.2005	80.4	75-125	0				
Chromium	23.78	0.38	7.519	17.9	78.3	75-125	0				
Copper	25.79	0.38	7.519	16.49	124	75-125	0				
Lead	23.72	0.38	7.519	15.12	114	75-125	0				
Nickel	19.12	0.38	7.519	12.31	90.6	75-125	0				
Selenium	6.351	0.38	7.519	0.5953	76.6	75-125	0				
Silver	5.822	0.38	7.519	0.05531	76.7	75-125	0				
Zinc	47.86	0.75	7.519	39.39	113	75-125	0			O	

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145251 Instrument ID ICPMS3 Method: SW6020A

MS				Sample ID: 19110373-04AMS			Units: mg/Kg		Analysis Date: 11/7/2019 07:43 PM	
Client ID: 20191105-L19-595 (SB-02) 30-31.5				Run ID: ICPMS3_191107B			SeqNo: 6041124		Prep Date: 11/7/2019	
									DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	388.4	3.8	7.519	363.5	331	75-125	0			SO

MSD				Sample ID: 19110373-04AMSD			Units: mg/Kg		Analysis Date: 11/7/2019 05:15 PM	
Client ID: 20191105-L19-595 (SB-02) 30-31.5				Run ID: ICPMS3_191107B			SeqNo: 6040596		Prep Date: 11/7/2019	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	24.18	0.39	7.776	18.34	75.2	75-125	24.91	2.96	20	
Cadmium	6.512	0.16	7.776	0.2005	81.2	75-125	6.243	4.22	20	
Chromium	26.14	0.39	7.776	17.9	106	75-125	23.78	9.45	20	
Copper	22.94	0.39	7.776	16.49	83	75-125	25.79	11.7	20	
Lead	22.8	0.39	7.776	15.12	98.7	75-125	23.72	3.96	20	
Nickel	20.91	0.39	7.776	12.31	111	75-125	19.12	8.93	20	
Selenium	6.759	0.39	7.776	0.5953	79.3	75-125	6.351	6.23	20	
Silver	6.113	0.39	7.776	0.05531	77.9	75-125	5.822	4.88	20	
Zinc	47.84	0.78	7.776	39.39	109	75-125	47.86	0.0271	20	O

MSD				Sample ID: 19110373-04AMSD			Units: mg/Kg		Analysis Date: 11/7/2019 07:45 PM	
Client ID: 20191105-L19-595 (SB-02) 30-31.5				Run ID: ICPMS3_191107B			SeqNo: 6041125		Prep Date: 11/7/2019	
									DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	344.6	3.9	7.776	363.5	-242	75-125	388.4	11.9	20	SO

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145353** Instrument ID **ICPMS4** Method: **SW6020A**

DUP		Sample ID: 19110373-04ADUP				Units: mg/L		Analysis Date: 11/8/2019 06:37 PM		
Client ID: 20191105-L19-595 (SB-02) 30-31.5		Run ID: ICPMS4_191108A				SeqNo: 6044640		Prep Date: 11/8/2019		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	404.1	5.0	0	0	0	0-0	463.6	13.7		
Magnesium	586.5	2.0	0	0	0	0-0	670.3	13.3		
Sodium	396.4	2.0	0	0	0	0-0	435.1	9.29		

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

Batch ID: **145353** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP		Sample ID: 19110373-04ADUP				Units: none		Analysis Date: 11/8/2019		
Client ID: 20191105-L19-595 (SB-02) 30-31.5		Run ID: SAR_191108A				SeqNo: 6045638		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	2.948	0.010	0	0	0		3.025	2.56	50	

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145200** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-145200-145200				Units: µg/Kg		Analysis Date: 11/7/2019 10:54 AM		
Client ID:		Run ID: SVMS6_191107A				SeqNo: 6039126		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	4.2								
Anthracene	U	4.2								
Benzo(a)anthracene	U	4.2								
Benzo(a)pyrene	U	4.2								
Benzo(b)fluoranthene	U	4.2								
Benzo(k)fluoranthene	U	4.2								
Chrysene	U	4.2								
Dibenzo(a,h)anthracene	U	4.2								
Fluoranthene	U	4.2								
Fluorene	U	4.2								
Indeno(1,2,3-cd)pyrene	U	4.2								
Naphthalene	U	4.2								
Pyrene	U	4.2								
Surr: 2-Fluorobiphenyl	915.5	0	3333	0	27.5	20-140	0			
Surr: 4-Terphenyl-d14	1110	0	3333	0	33.3	22-172	0			
Surr: Nitrobenzene-d5	999	0	3333	0	30	28-140	0			

LCS		Sample ID: SLCSS1-145200-145200				Units: µg/Kg		Analysis Date: 11/7/2019 11:33 AM		
Client ID:		Run ID: SVMS6_191107A				SeqNo: 6039536		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	808.4	4.2	1333	0	60.6	40-140	0			
Anthracene	911.2	4.2	1333	0	68.4	40-140	0			
Benzo(a)anthracene	895.4	4.2	1333	0	67.2	40-140	0			
Benzo(a)pyrene	871.2	4.2	1333	0	65.4	40-140	0			
Benzo(b)fluoranthene	884	4.2	1333	0	66.3	40-140	0			
Benzo(k)fluoranthene	867.8	4.2	1333	0	65.1	40-140	0			
Chrysene	849.9	4.2	1333	0	63.8	40-140	0			
Dibenzo(a,h)anthracene	744.4	4.2	1333	0	55.8	40-140	0			
Fluoranthene	866.8	4.2	1333	0	65	40-140	0			
Fluorene	880.4	4.2	1333	0	66	40-140	0			
Indeno(1,2,3-cd)pyrene	774.4	4.2	1333	0	58.1	40-140	0			
Naphthalene	871.7	4.2	1333	0	65.4	40-140	0			
Pyrene	874.2	4.2	1333	0	65.6	40-140	0			
Surr: 2-Fluorobiphenyl	2250	0	3333	0	67.5	20-140	0			
Surr: 4-Terphenyl-d14	1792	0	3333	0	53.8	22-172	0			
Surr: Nitrobenzene-d5	2369	0	3333	0	71.1	28-140	0			

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145200 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 19110023-16B MS		Units: µg/Kg		Analysis Date: 11/7/2019 11:51 AM		
Client ID:			Run ID: SVMS6_191107A			SeqNo: 6039537		Prep Date: 11/6/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1049	4.1	1313	0	79.9	40-140	0			
Anthracene	1164	4.1	1313	4.679	88.3	40-140	0			
Benzo(a)anthracene	1175	4.1	1313	9.874	88.7	40-140	0			
Benzo(a)pyrene	1172	4.1	1313	10.26	88.5	40-140	0			
Benzo(b)fluoranthene	1207	4.1	1313	12.45	91	40-140	0			
Benzo(k)fluoranthene	1168	4.1	1313	4.243	88.6	40-140	0			
Chrysene	1089	4.1	1313	8.97	82.3	40-140	0			
Dibenzo(a,h)anthracene	1140	4.1	1313	0	86.9	40-140	0			
Fluoranthene	1116	4.1	1313	11.7	84.1	40-140	0			
Fluorene	1140	4.1	1313	0	86.9	40-140	0			
Indeno(1,2,3-cd)pyrene	1254	4.1	1313	3.872	95.2	40-140	0			
Naphthalene	1110	4.1	1313	0	84.6	40-140	0			
Pyrene	994.7	4.1	1313	12.26	74.8	40-140	0			
Surr: 2-Fluorobiphenyl	2662	0	3283	0	81.1	20-140	0			
Surr: 4-Terphenyl-d14	1935	0	3283	0	59	22-172	0			
Surr: Nitrobenzene-d5	2500	0	3283	0	76.1	28-140	0			

MSD				Sample ID: 19110023-16B MSD			Units: µg/Kg		Analysis Date: 11/7/2019 12:07 PM		
Client ID:		Run ID: SVMS6_191107A			SeqNo: 6039539		Prep Date: 11/6/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1074	4.1	1308	0	82.1	40-140	1049	2.36	30		
Anthracene	1192	4.1	1308	4.679	90.8	40-140	1164	2.38	30		
Benzo(a)anthracene	1216	4.1	1308	9.874	92.1	40-140	1175	3.42	30		
Benzo(a)pyrene	1262	4.1	1308	10.26	95.7	40-140	1172	7.4	30		
Benzo(b)fluoranthene	1220	4.1	1308	12.45	92.3	40-140	1207	1.06	30		
Benzo(k)fluoranthene	1195	4.1	1308	4.243	91	40-140	1168	2.33	30		
Chrysene	1138	4.1	1308	8.97	86.3	40-140	1089	4.4	30		
Dibenzo(a,h)anthracene	1184	4.1	1308	0	90.5	40-140	1140	3.79	30		
Fluoranthene	1038	4.1	1308	11.7	78.4	40-140	1116	7.24	30		
Fluorene	1168	4.1	1308	0	89.2	40-140	1140	2.39	30		
Indeno(1,2,3-cd)pyrene	1301	4.1	1308	3.872	99.1	40-140	1254	3.66	30		
Naphthalene	1153	4.1	1308	0	88.1	40-140	1110	3.77	30		
Pyrene	1015	4.1	1308	12.26	76.7	40-140	994.7	2.07	30		
Surr: 2-Fluorobiphenyl	2829	0	3272	0	86.5	20-140	2662	6.07	0		
Surr: 4-Terphenyl-d14	1951	0	3272	0	59.6	22-172	1935	0.824	0		
Surr: Nitrobenzene-d5	2850	0	3272	0	87.1	28-140	2500	13.1	0		

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145195** Instrument ID **VMS9** Method: **SW8260C**

MBLK				Sample ID: MBLK-145195-145195			Units: µg/Kg-dry		Analysis Date: 11/6/2019 07:37 PM		
Client ID:			Run ID: VMS9_191106A			SeqNo: 6039191		Prep Date: 11/6/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	U	30									
Ethylbenzene	U	30									
m,p-Xylene	U	60									
o-Xylene	U	30									
Toluene	U	30									
Xylenes, Total	U	90									
Surr: 1,2-Dichloroethane-d4	1010	0	1000	0	101	70-130	0				
Surr: 4-Bromofluorobenzene	1018	0	1000	0	102	70-130	0				
Surr: Dibromofluoromethane	923	0	1000	0	92.3	70-130	0				
Surr: Toluene-d8	978.5	0	1000	0	97.8	70-130	0				

LCS				Sample ID: LCS-145195-145195			Units: µg/Kg-dry		Analysis Date: 11/6/2019 06:35 PM		
Client ID:			Run ID: VMS9_191106A			SeqNo: 6039189		Prep Date: 11/6/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	943.5	30	1000	0	94.4	75-125	0				
Ethylbenzene	952.5	30	1000	0	95.2	75-125	0				
m,p-Xylene	1856	60	2000	0	92.8	80-125	0				
o-Xylene	948	30	1000	0	94.8	75-125	0				
Toluene	913	30	1000	0	91.3	70-125	0				
Xylenes, Total	2804	90	3000	0	93.5	75-125	0				
Surr: 1,2-Dichloroethane-d4	1000	0	1000	0	100	70-130	0				
Surr: 4-Bromofluorobenzene	1015	0	1000	0	102	70-130	0				
Surr: Dibromofluoromethane	1026	0	1000	0	103	70-130	0				
Surr: Toluene-d8	1006	0	1000	0	101	70-130	0				

MS				Sample ID: 19110368-02A MS			Units: µg/Kg-dry		Analysis Date: 11/7/2019 01:19 AM		
Client ID:			Run ID: VMS9_191106A			SeqNo: 6039200		Prep Date: 11/6/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	976.3	32	1076	14.49	89.4	75-125	0				
Ethylbenzene	940.3	32	1076	0	87.4	75-125	0				
m,p-Xylene	1869	65	2153	17.48	86	80-125	0				
o-Xylene	984.9	32	1076	0	91.5	75-125	0				
Toluene	881.1	32	1076	19.48	80	70-125	0				
Xylenes, Total	2854	97	3229	0	88.4	75-125	0				
Surr: 1,2-Dichloroethane-d4	1118	0	1076	0	104	70-130	0				
Surr: 4-Bromofluorobenzene	1099	0	1076	0	102	70-130	0				
Surr: Dibromofluoromethane	1037	0	1076	0	96.4	70-130	0				
Surr: Toluene-d8	1040	0	1076	0	96.6	70-130	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145195** Instrument ID **VMS9** Method: **SW8260C**

MSD				Sample ID: 19110368-02A MSD			Units: µg/Kg-dry		Analysis Date: 11/7/2019 01:35 AM		
Client ID:			Run ID: VMS9_191106A			SeqNo: 6039201		Prep Date: 11/6/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	912.3	32	1082	14.49	83	75-125	976.3	6.78	30		
Ethylbenzene	874.5	32	1082	0	80.8	75-125	940.3	7.25	30		
m,p-Xylene	1784	65	2165	17.48	81.6	80-125	1869	4.69	30		
o-Xylene	917.7	32	1082	0	84.8	75-125	984.9	7.06	30		
Toluene	839.8	32	1082	19.48	75.8	70-125	881.1	4.79	30		
Xylenes, Total	2701	97	3247	0	83.2	75-125	2854	5.5	30		
Surr: 1,2-Dichloroethane-d4	1119	0	1082	0	103	70-130	1118	0.0573	30		
Surr: 4-Bromofluorobenzene	1098	0	1082	0	101	70-130	1099	0.099	30		
Surr: Dibromofluoromethane	1044	0	1082	0	96.4	70-130	1037	0.643	30		
Surr: Toluene-d8	1050	0	1082	0	97	70-130	1040	0.953	30		

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145248** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-145248-145248				Units: mg/Kg		Analysis Date: 11/7/2019 04:05 PM		
Client ID:		Run ID: WETCHEM_191107R		SeqNo: 6040094		Prep Date: 11/7/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-145248-145248				Units: mg/Kg		Analysis Date: 11/7/2019 04:05 PM		
Client ID:		Run ID: WETCHEM_191107R		SeqNo: 6040095		Prep Date: 11/7/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.67 1.0 5 0 93.4 80-120 0

MS		Sample ID: 19110368-01A MS				Units: mg/Kg		Analysis Date: 11/7/2019 04:05 PM		
Client ID:		Run ID: WETCHEM_191107R		SeqNo: 6040097		Prep Date: 11/7/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.64 1.0 5 0.68 59.2 75-125 0 S

MS		Sample ID: 19110368-01A MSI				Units: mg/Kg		Analysis Date: 11/7/2019 04:05 PM		
Client ID:		Run ID: WETCHEM_191107R		SeqNo: 6040099		Prep Date: 11/7/2019		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1921 100 2060 0.68 93.2 75-125 0

MSD		Sample ID: 19110368-01A MSD				Units: mg/Kg		Analysis Date: 11/7/2019 04:05 PM		
Client ID:		Run ID: WETCHEM_191107R		SeqNo: 6040098		Prep Date: 11/7/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.51 1.0 5 0.68 56.6 75-125 3.64 3.64 20 S

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145271** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-145271-145271				Units: s.u.		Analysis Date: 11/8/2019 09:00 AM		
Client ID:		Run ID: WETCHEM_191108B			SeqNo: 6041189		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.96	0.10	4	0	99	90-110	0			

DUP		Sample ID: 19110259-07B DUP					Units: s.u.		Analysis Date: 11/8/2019 09:00 AM		
Client ID:			Run ID: WETCHEM_191108B			SeqNo: 6041191		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	12.15	0.10	0	0	0	0-0	11.9	2.08	20		
Temperature	22	0.10	0	0	0		21.6	1.83			

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110373
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145353** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 19110373-04A DUP				Units: mmhos/cm @25°		Analysis Date: 11/11/2019 03:31 P		
Client ID: 20191105-L19-595 (SB-02) 30-31.5		Run ID: WETCHEM_191111M				SeqNo: 6047041		Prep Date: 11/8/2019		DF: 20
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	9.22	0.10	0	0	0		10.22	10.3	50	

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110373
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **R274696** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R274696				Units: % of sample		Analysis Date: 11/6/2019 01:21 PM		
Client ID:		Run ID: MOIST_191106B				SeqNo: 6038915		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R274696					Units: % of sample		Analysis Date: 11/6/2019 01:21 PM		
Client ID:			Run ID: MOIST_191106B			SeqNo: 6038914		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.10 100 0 100 98-102 0

DUP				Sample ID: 19110285-07A DUP				Units: % of sample			Analysis Date: 11/6/2019 01:21 PM			
Client ID:				Run ID: MOIST_191106B				SeqNo: 6038899			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 8.82 0.10 0 0 0 0-0 8.61 2.41 10

DUP				Sample ID: 19110285-09A DUP				Units: % of sample			Analysis Date: 11/6/2019 01:21 PM			
Client ID:				Run ID: MOIST_191106B				SeqNo: 6038902			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 7.16 0.10 0 0 0 0-0 7.24 1.11 10

The following samples were analyzed in this batch:

19110373-01A	19110373-02A	19110373-03A
19110373-04A		

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 1

[illegible]

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: HongKong@alsglobal.com

24 HR RUSH FOR BTEX & TPH GRO — STANDARD FOR REST OF TABLE 910

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **06-Nov-19 10:00**

Work Order: **19110373**

Received by: **MJG**

Checklist completed by Matthew Gaylord
eSignature

06-Nov-19
Date

Reviewed by: Chad Whelton
eSignature

06-Nov-19
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>2.9/2.9C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>11/6/2019 11:51:48 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:



18-Nov-2019

Jake Janicek
Caerus Oil and Gas LLC
143 Diamond Ave.
Parachute, CO 81635

Re: **L19-595 Assessment**

Work Order: **19110544**

Dear Jake,

ALS Environmental received 8 samples on 07-Nov-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland 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 39.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

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: L19-595 Assessment
Work Order: 19110544

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>
19110544-01	20191106-L19-595 (SB05) @ 15-16.5'	Soil		11/6/2019 13:35	11/7/2019 09:30	<input type="checkbox"/>
19110544-02	20191106-L19-595 (SB05) @ 20-21.5'	Soil		11/6/2019 13:50	11/7/2019 09:30	<input type="checkbox"/>
19110544-03	20191106-L19-595 (SB05) @ 25-26.5'	Soil		11/6/2019 14:00	11/7/2019 09:30	<input type="checkbox"/>
19110544-04	20191106-L19-595 (SB03) @ 20-21.5'	Soil		11/6/2019 09:50	11/7/2019 09:30	<input type="checkbox"/>
19110544-05	20191106-L19-595 (SB03) @ 25-26.5'	Soil		11/6/2019 10:15	11/7/2019 09:30	<input type="checkbox"/>
19110544-06	20191106-L19-595 (SB03) @ 15-16.5'	Soil		11/6/2019 09:36	11/7/2019 09:30	<input type="checkbox"/>
19110544-07	20191106-L19-595 (SB04) @ 20-21.5'	Soil		11/6/2019 12:35	11/7/2019 09:30	<input type="checkbox"/>
19110544-08	20191106-L19-595 (SB04) @ 15-16.5'	Soil		11/6/2019 12:15	11/7/2019 09:30	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Work Order: 19110544

Case Narrative

Batch 145245, Method GRO_8015_S, Samples 19110544-01A, -02A, and -06A: GRO surrogate recoveries high due to matrix interference.

Batch 145274, Method VOC_8260_S, Sample 19110544-01A: VOC surrogate recovery high due to matrix interference.

Batch 145364, Method DRO_8015_S, Sample 19110544-01A MS/MSD: The MS/MSD recovery was outside of the control limit for DRO; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required.

<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
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
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
°C	Degrees Celcius
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: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB05) @ 15-16.5'
 Collection Date: 11/6/2019 01:35 PM

Work Order: 19110544
 Lab ID: 19110544-01
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	1,800		3.2	5.7	mg/Kg-dry	1	11/11/2019 19:54
Surr: 4-Terphenyl-d14	73.7			33-111	%REC	1	11/11/2019 19:54
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	9,200		14	34	mg/Kg	5	11/16/2019 06:08
Surr: Toluene-d8	278	S		71-123	%REC	5	11/16/2019 06:08
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.037		0.0022	0.022	mg/Kg-dry	1	11/13/2019 10:59
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	17		0.055	0.46	mg/Kg-dry	1	11/13/2019 13:35
Barium	420		4.2	4.6	mg/Kg-dry	10	11/13/2019 15:07
Cadmium	0.57		0.028	0.18	mg/Kg-dry	1	11/13/2019 13:35
Chromium	30		0.20	0.46	mg/Kg-dry	1	11/13/2019 13:35
Copper	28		0.46	0.46	mg/Kg-dry	1	11/13/2019 13:35
Lead	23		0.22	0.46	mg/Kg-dry	1	11/13/2019 13:35
Nickel	27		2.4	4.6	mg/Kg-dry	10	11/13/2019 15:07
Selenium	0.82		0.42	0.46	mg/Kg-dry	1	11/13/2019 13:35
Silver	0.088	J	0.061	0.46	mg/Kg-dry	1	11/13/2019 13:35
Zinc	71		0.90	0.92	mg/Kg-dry	1	11/13/2019 13:35
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	120		2.5	5.0	mg/L	10	11/14/2019 14:27
Magnesium	110		0.50	2.0	mg/L	10	11/14/2019 14:27
Sodium	750		0.45	2.0	mg/L	10	11/14/2019 14:27
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	12		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00094	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Anthracene	U		0.0016	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Benzo(a)anthracene	U		0.0020	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Benzo(a)pyrene	U		0.0013	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Benzo(b)fluoranthene	U		0.0012	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Benzo(k)fluoranthene	U		0.0014	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Chrysene	U		0.0010	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Dibenzo(a,h)anthracene	U		0.0011	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Fluoranthene	U		0.00090	0.0049	mg/Kg-dry	1	11/11/2019 19:24

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB05) @ 15-16.5'
 Collection Date: 11/6/2019 01:35 PM

Work Order: 19110544
 Lab ID: 19110544-01
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.11		0.0016	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Naphthalene	3.3		0.0021	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Pyrene	U		0.00080	0.0049	mg/Kg-dry	1	11/11/2019 19:24
Surr: 2-Fluorobiphenyl	74.9			20-140	%REC	1	11/11/2019 19:24
Surr: 4-Terphenyl-d14	44.0			22-172	%REC	1	11/11/2019 19:24
Surr: Nitrobenzene-d5	105			28-140	%REC	1	11/11/2019 19:24
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	0.22		0.0070	0.041	mg/Kg-dry	1	11/12/2019 21:49
Ethylbenzene	3.7		0.0087	0.041	mg/Kg-dry	1	11/12/2019 21:49
m,p-Xylene	360		5.5	8.2	mg/Kg-dry	100	11/15/2019 15:03
o-Xylene	59		0.16	0.41	mg/Kg-dry	10	11/15/2019 01:36
Toluene	1.7		0.011	0.041	mg/Kg-dry	1	11/12/2019 21:49
Xylenes, Total	420		5.5	12	mg/Kg-dry	100	11/15/2019 15:03
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	11/12/2019 21:49
Surr: 1,2-Dichloroethane-d4	100			70-130	%REC	10	11/15/2019 01:36
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	100	11/15/2019 15:03
Surr: 4-Bromofluorobenzene	119			70-130	%REC	1	11/12/2019 21:49
Surr: 4-Bromofluorobenzene	123			70-130	%REC	10	11/15/2019 01:36
Surr: 4-Bromofluorobenzene	102			70-130	%REC	100	11/15/2019 15:03
Surr: Dibromofluoromethane	88.8			70-130	%REC	1	11/12/2019 21:49
Surr: Dibromofluoromethane	91.9			70-130	%REC	10	11/15/2019 01:36
Surr: Dibromofluoromethane	94.6			70-130	%REC	100	11/15/2019 15:03
Surr: Toluene-d8	132	S		70-130	%REC	1	11/12/2019 21:49
Surr: Toluene-d8	123			70-130	%REC	10	11/15/2019 01:36
Surr: Toluene-d8	103			70-130	%REC	100	11/15/2019 15:03
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	6.7		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	29		0.37	1.2	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	1.1	J	0.96	1.1	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	15		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.18		0.10	0.100	s.u.	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC

Project: L19-595 Assessment

Sample ID: 20191106-L19-595 (SB05) @ 15-16.5'

Collection Date: 11/6/2019 01:35 PM

Work Order: 19110544

Lab ID: 19110544-01

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Temperature	22.7		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB05) @ 20-21.5'
 Collection Date: 11/6/2019 01:50 PM

Work Order: 19110544
 Lab ID: 19110544-02
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	44		3.4	5.9	mg/Kg-dry	1	11/11/2019 20:53
Surr: 4-Terphenyl-d14	59.9			33-111	%REC	1	11/11/2019 20:53
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	410		3.0	7.2	mg/Kg	1	11/13/2019 15:50
Surr: Toluene-d8	125	S		71-123	%REC	1	11/13/2019 15:50
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.030		0.0018	0.018	mg/Kg-dry	1	11/13/2019 11:02
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	26		0.049	0.41	mg/Kg-dry	1	11/13/2019 13:37
Barium	350		3.8	4.1	mg/Kg-dry	10	11/13/2019 15:09
Cadmium	0.32		0.024	0.16	mg/Kg-dry	1	11/13/2019 13:37
Chromium	22		0.18	0.41	mg/Kg-dry	1	11/13/2019 13:37
Copper	31		0.41	0.41	mg/Kg-dry	1	11/13/2019 13:37
Lead	17		0.20	0.41	mg/Kg-dry	1	11/13/2019 13:37
Nickel	27		2.1	4.1	mg/Kg-dry	10	11/13/2019 15:09
Selenium	1.0		0.38	0.41	mg/Kg-dry	1	11/13/2019 13:37
Silver	0.054	J	0.054	0.41	mg/Kg-dry	1	11/13/2019 13:37
Zinc	60		0.80	0.82	mg/Kg-dry	1	11/13/2019 13:37
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	270		2.5	5.0	mg/L	10	11/14/2019 14:29
Magnesium	140		0.50	2.0	mg/L	10	11/14/2019 14:29
Sodium	1,100		0.45	2.0	mg/L	10	11/14/2019 14:29
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	13		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00094	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Anthracene	U		0.0016	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Benzo(a)anthracene	U		0.0020	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Benzo(a)pyrene	U		0.0013	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Benzo(b)fluoranthene	U		0.0012	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Benzo(k)fluoranthene	U		0.0014	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Chrysene	U		0.0010	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Dibenzo(a,h)anthracene	U		0.0011	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Fluoranthene	U		0.00089	0.0048	mg/Kg-dry	1	11/11/2019 19:40

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB05) @ 20-21.5'
Collection Date: 11/6/2019 01:50 PM

Work Order: 19110544
Lab ID: 19110544-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Naphthalene	0.079		0.0021	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Pyrene	U		0.00080	0.0048	mg/Kg-dry	1	11/11/2019 19:40
Surr: 2-Fluorobiphenyl	83.6			20-140	%REC	1	11/11/2019 19:40
Surr: 4-Terphenyl-d14	50.3			22-172	%REC	1	11/11/2019 19:40
Surr: Nitrobenzene-d5	71.9			28-140	%REC	1	11/11/2019 19:40
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	U		0.0074	0.043	mg/Kg-dry	1	11/15/2019 02:10
Ethylbenzene	0.30		0.0091	0.043	mg/Kg-dry	1	11/15/2019 02:10
m,p-Xylene	4.4		0.058	0.086	mg/Kg-dry	1	11/15/2019 02:10
o-Xylene	0.53		0.017	0.043	mg/Kg-dry	1	11/15/2019 02:10
Toluene	0.15		0.012	0.043	mg/Kg-dry	1	11/15/2019 02:10
Xylenes, Total	4.9		0.058	0.13	mg/Kg-dry	1	11/15/2019 02:10
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	11/15/2019 02:10
Surr: 4-Bromofluorobenzene	115			70-130	%REC	1	11/15/2019 02:10
Surr: Dibromofluoromethane	85.0			70-130	%REC	1	11/15/2019 02:10
Surr: Toluene-d8	99.1			70-130	%REC	1	11/15/2019 02:10
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	10		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	22		0.37	1.2	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	17		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	7.62		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.7		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB05) @ 25-26.5'
 Collection Date: 11/6/2019 02:00 PM

Work Order: 19110544
 Lab ID: 19110544-03
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	33		3.4	6.0	mg/Kg-dry	1	11/11/2019 21:22
Surr: 4-Terphenyl-d14	62.5			33-111	%REC	1	11/11/2019 21:22
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	160		3.2	7.8	mg/Kg	1	11/13/2019 16:20
Surr: Toluene-d8	84.2			71-123	%REC	1	11/13/2019 16:20
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.030		0.0021	0.021	mg/Kg-dry	1	11/13/2019 11:04
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	26		0.050	0.41	mg/Kg-dry	1	11/13/2019 13:39
Barium	390		3.8	4.1	mg/Kg-dry	10	11/13/2019 15:11
Cadmium	0.58		0.025	0.17	mg/Kg-dry	1	11/13/2019 13:39
Chromium	26		0.18	0.41	mg/Kg-dry	1	11/13/2019 13:39
Copper	22		0.41	0.41	mg/Kg-dry	1	11/13/2019 13:39
Lead	20		0.20	0.41	mg/Kg-dry	1	11/13/2019 13:39
Nickel	19		2.2	4.1	mg/Kg-dry	10	11/13/2019 15:11
Selenium	0.72		0.38	0.41	mg/Kg-dry	1	11/13/2019 13:39
Silver	0.083	J	0.055	0.41	mg/Kg-dry	1	11/13/2019 13:39
Zinc	50		0.81	0.83	mg/Kg-dry	1	11/13/2019 13:39
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	63		2.5	5.0	mg/L	10	11/14/2019 14:30
Magnesium	51		0.50	2.0	mg/L	10	11/14/2019 14:30
Sodium	1,000		0.45	2.0	mg/L	10	11/14/2019 14:30
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	24		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00099	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Anthracene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Benzo(a)anthracene	U		0.0021	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Benzo(a)pyrene	U		0.0014	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Benzo(b)fluoranthene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Benzo(k)fluoranthene	U		0.0015	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Chrysene	U		0.0010	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Dibenzo(a,h)anthracene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Fluoranthene	U		0.00094	0.0051	mg/Kg-dry	1	11/11/2019 19:55

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB05) @ 25-26.5'
Collection Date: 11/6/2019 02:00 PM

Work Order: 19110544
Lab ID: 19110544-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Naphthalene	0.010		0.0022	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Pyrene	U		0.00084	0.0051	mg/Kg-dry	1	11/11/2019 19:55
Surr: 2-Fluorobiphenyl	95.9			20-140	%REC	1	11/11/2019 19:55
Surr: 4-Terphenyl-d14	59.9			22-172	%REC	1	11/11/2019 19:55
Surr: Nitrobenzene-d5	89.9			28-140	%REC	1	11/11/2019 19:55
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	U		0.0080	0.047	mg/Kg-dry	1	11/15/2019 02:27
Ethylbenzene	U		0.0098	0.047	mg/Kg-dry	1	11/15/2019 02:27
m,p-Xylene	0.21		0.062	0.093	mg/Kg-dry	1	11/15/2019 02:27
o-Xylene	0.051		0.018	0.047	mg/Kg-dry	1	11/15/2019 02:27
Toluene	U		0.013	0.047	mg/Kg-dry	1	11/15/2019 02:27
Xylenes, Total	0.26		0.062	0.14	mg/Kg-dry	1	11/15/2019 02:27
Surr: 1,2-Dichloroethane-d4	99.0			70-130	%REC	1	11/15/2019 02:27
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	11/15/2019 02:27
Surr: Dibromofluoromethane	79.6			70-130	%REC	1	11/15/2019 02:27
Surr: Toluene-d8	97.6			70-130	%REC	1	11/15/2019 02:27
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	7.8		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	26		0.39	1.2	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	20		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.15		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.4		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB03) @ 20-21.5'
 Collection Date: 11/6/2019 09:50 AM

Work Order: 19110544
 Lab ID: 19110544-04
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	92		3.5	6.1	mg/Kg-dry	1	11/11/2019 21:51
Surr: 4-Terphenyl-d14	55.2			33-111	%REC	1	11/11/2019 21:51
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	160		3.3	8.0	mg/Kg	1	11/13/2019 16:49
Surr: Toluene-d8	110			71-123	%REC	1	11/13/2019 16:49
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.012	J	0.0022	0.022	mg/Kg-dry	1	11/13/2019 11:10
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	25		0.061	0.50	mg/Kg-dry	1	11/13/2019 13:41
Barium	440		4.6	5.0	mg/Kg-dry	10	11/13/2019 15:12
Cadmium	0.23		0.030	0.20	mg/Kg-dry	1	11/13/2019 13:41
Chromium	23		0.22	0.50	mg/Kg-dry	1	11/13/2019 13:41
Copper	24		0.50	0.50	mg/Kg-dry	1	11/13/2019 13:41
Lead	17		0.24	0.50	mg/Kg-dry	1	11/13/2019 13:41
Nickel	17		0.26	0.50	mg/Kg-dry	1	11/13/2019 13:41
Selenium	0.62		0.46	0.50	mg/Kg-dry	1	11/13/2019 13:41
Silver	0.076	J	0.067	0.50	mg/Kg-dry	1	11/13/2019 13:41
Zinc	50		0.99	1.0	mg/Kg-dry	1	11/13/2019 13:41
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	570		2.5	5.0	mg/L	10	11/14/2019 14:32
Magnesium	390		0.50	2.0	mg/L	10	11/14/2019 14:32
Sodium	860		0.45	2.0	mg/L	10	11/14/2019 14:32
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	6.8		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00098	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Anthracene	U		0.0017	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Benzo(a)anthracene	U		0.0021	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Benzo(a)pyrene	U		0.0014	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Benzo(b)fluoranthene	U		0.0012	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Benzo(k)fluoranthene	U		0.0015	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Chrysene	U		0.0010	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Dibenzo(a,h)anthracene	U		0.0012	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Fluoranthene	U		0.00093	0.0050	mg/Kg-dry	1	11/11/2019 20:11

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB03) @ 20-21.5'
Collection Date: 11/6/2019 09:50 AM

Work Order: 19110544
Lab ID: 19110544-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Naphthalene	0.018		0.0022	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Pyrene	U		0.00083	0.0050	mg/Kg-dry	1	11/11/2019 20:11
Surr: 2-Fluorobiphenyl	94.9			20-140	%REC	1	11/11/2019 20:11
Surr: 4-Terphenyl-d14	58.4			22-172	%REC	1	11/11/2019 20:11
Surr: Nitrobenzene-d5	90.0			28-140	%REC	1	11/11/2019 20:11
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	U		0.0082	0.048	mg/Kg-dry	1	11/15/2019 03:18
Ethylbenzene	0.11		0.010	0.048	mg/Kg-dry	1	11/15/2019 03:18
m,p-Xylene	1.3		0.064	0.095	mg/Kg-dry	1	11/15/2019 03:18
o-Xylene	0.23		0.018	0.048	mg/Kg-dry	1	11/15/2019 03:18
Toluene	0.057		0.013	0.048	mg/Kg-dry	1	11/15/2019 03:18
Xylenes, Total	1.5		0.064	0.14	mg/Kg-dry	1	11/15/2019 03:18
Surr: 1,2-Dichloroethane-d4	99.3			70-130	%REC	1	11/15/2019 03:18
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	11/15/2019 03:18
Surr: Dibromofluoromethane	79.9			70-130	%REC	1	11/15/2019 03:18
Surr: Toluene-d8	95.7			70-130	%REC	1	11/15/2019 03:18
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	13		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	22		0.38	1.2	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	1.1	J	1.0	1.2	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	19		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.00		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.6		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB03) @ 25-26.5'
 Collection Date: 11/6/2019 10:15 AM

Work Order: 19110544
 Lab ID: 19110544-05
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	6.6		3.4	5.9	mg/Kg-dry	1	11/11/2019 22:20
Surr: 4-Terphenyl-d14	61.9			33-111	%REC	1	11/11/2019 22:20
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	23		3.1	7.5	mg/Kg	1	11/13/2019 17:19
Surr: Toluene-d8	94.3			71-123	%REC	1	11/13/2019 17:19
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.031		0.0023	0.023	mg/Kg-dry	1	11/13/2019 11:13
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	29		0.053	0.44	mg/Kg-dry	1	11/13/2019 13:43
Barium	390		4.1	4.4	mg/Kg-dry	10	11/13/2019 15:14
Cadmium	0.24		0.027	0.18	mg/Kg-dry	1	11/13/2019 13:43
Chromium	22		0.19	0.44	mg/Kg-dry	1	11/13/2019 13:43
Copper	24		0.44	0.44	mg/Kg-dry	1	11/13/2019 13:43
Lead	17		0.21	0.44	mg/Kg-dry	1	11/13/2019 13:43
Nickel	15		0.23	0.44	mg/Kg-dry	1	11/13/2019 13:43
Selenium	0.63		0.41	0.44	mg/Kg-dry	1	11/13/2019 13:43
Silver	0.077	J	0.058	0.44	mg/Kg-dry	1	11/13/2019 13:43
Zinc	44		0.87	0.88	mg/Kg-dry	1	11/13/2019 13:43
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	570		2.5	5.0	mg/L	10	11/14/2019 14:34
Magnesium	560		0.50	2.0	mg/L	10	11/14/2019 14:34
Sodium	830		0.45	2.0	mg/L	10	11/14/2019 14:34
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	6.0		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00098	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Anthracene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Benzo(a)anthracene	U		0.0021	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Benzo(a)pyrene	U		0.0014	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Benzo(b)fluoranthene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Benzo(k)fluoranthene	U		0.0015	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Chrysene	U		0.0010	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Dibenzo(a,h)anthracene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Fluoranthene	U		0.00093	0.0051	mg/Kg-dry	1	11/11/2019 20:26

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB03) @ 25-26.5'
Collection Date: 11/6/2019 10:15 AM

Work Order: 19110544
Lab ID: 19110544-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Naphthalene	U		0.0022	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Pyrene	U		0.00084	0.0051	mg/Kg-dry	1	11/11/2019 20:26
Surr: 2-Fluorobiphenyl	75.4			20-140	%REC	1	11/11/2019 20:26
Surr: 4-Terphenyl-d14	47.8			22-172	%REC	1	11/11/2019 20:26
Surr: Nitrobenzene-d5	73.3			28-140	%REC	1	11/11/2019 20:26
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	U		0.0077	0.045	mg/Kg-dry	1	11/15/2019 03:35
Ethylbenzene	U		0.0095	0.045	mg/Kg-dry	1	11/15/2019 03:35
m,p-Xylene	0.37		0.060	0.090	mg/Kg-dry	1	11/15/2019 03:35
o-Xylene	0.047		0.017	0.045	mg/Kg-dry	1	11/15/2019 03:35
Toluene	U		0.012	0.045	mg/Kg-dry	1	11/15/2019 03:35
Xylenes, Total	0.42		0.060	0.13	mg/Kg-dry	1	11/15/2019 03:35
Surr: 1,2-Dichloroethane-d4	99.6			70-130	%REC	1	11/15/2019 03:35
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	11/15/2019 03:35
Surr: Dibromofluoromethane	79.0			70-130	%REC	1	11/15/2019 03:35
Surr: Toluene-d8	98.2			70-130	%REC	1	11/15/2019 03:35
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	13		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	22		0.38	1.2	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.33		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.7		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB03) @ 15-16.5'
Collection Date: 11/6/2019 09:36 AM

Work Order: 19110544
Lab ID: 19110544-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	1,200		3.6	6.3	mg/Kg-dry	1	11/11/2019 22:49
Surr: 4-Terphenyl-d14	61.2			33-111	%REC	1	11/11/2019 22:49
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	5,000		17	40	mg/Kg	5	11/16/2019 06:37
Surr: Toluene-d8	126	S		71-123	%REC	5	11/16/2019 06:37
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSB
Mercury	0.032		0.0025	0.025	mg/Kg-dry	1	11/13/2019 11:21
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	18		0.063	0.53	mg/Kg-dry	1	11/13/2019 13:45
Barium	580		4.8	5.3	mg/Kg-dry	10	11/13/2019 15:16
Cadmium	0.30		0.032	0.21	mg/Kg-dry	1	11/13/2019 13:45
Chromium	30		0.23	0.53	mg/Kg-dry	1	11/13/2019 13:45
Copper	22		0.53	0.53	mg/Kg-dry	1	11/13/2019 13:45
Lead	20		0.25	0.53	mg/Kg-dry	1	11/13/2019 13:45
Nickel	23		2.7	5.3	mg/Kg-dry	10	11/13/2019 15:16
Selenium	0.85		0.48	0.53	mg/Kg-dry	1	11/13/2019 13:45
Silver	U		0.069	0.53	mg/Kg-dry	1	11/13/2019 13:45
Zinc	56		1.0	1.1	mg/Kg-dry	1	11/13/2019 13:45
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	43		2.5	5.0	mg/L	10	11/14/2019 14:35
Magnesium	36		0.50	2.0	mg/L	10	11/14/2019 14:35
Sodium	1,100		0.45	2.0	mg/L	10	11/14/2019 14:35
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	29		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.0010	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Anthracene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Benzo(a)anthracene	U		0.0021	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Benzo(a)pyrene	U		0.0014	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Benzo(b)fluoranthene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Benzo(k)fluoranthene	U		0.0015	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Chrysene	U		0.0011	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Dibenzo(a,h)anthracene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Fluoranthene	U		0.00095	0.0051	mg/Kg-dry	1	11/11/2019 20:42

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB03) @ 15-16.5'
Collection Date: 11/6/2019 09:36 AM

Work Order: 19110544
Lab ID: 19110544-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.061		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Naphthalene	1.2		0.0022	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Pyrene	U		0.00085	0.0051	mg/Kg-dry	1	11/11/2019 20:42
Surr: 2-Fluorobiphenyl	87.1			20-140	%REC	1	11/11/2019 20:42
Surr: 4-Terphenyl-d14	60.4			22-172	%REC	1	11/11/2019 20:42
Surr: Nitrobenzene-d5	108			28-140	%REC	1	11/11/2019 20:42
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	0.10		0.0081	0.048	mg/Kg-dry	1	11/12/2019 23:08
Ethylbenzene	3.2		0.010	0.048	mg/Kg-dry	1	11/12/2019 23:08
m,p-Xylene	140		0.64	0.95	mg/Kg-dry	10	11/15/2019 01:53
o-Xylene	7.6		0.018	0.048	mg/Kg-dry	1	11/12/2019 23:08
Toluene	0.70		0.013	0.048	mg/Kg-dry	1	11/12/2019 23:08
Xylenes, Total	160		0.64	1.4	mg/Kg-dry	10	11/15/2019 01:53
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	11/12/2019 23:08
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	10	11/15/2019 01:53
Surr: 4-Bromofluorobenzene	122			70-130	%REC	1	11/12/2019 23:08
Surr: 4-Bromofluorobenzene	111			70-130	%REC	10	11/15/2019 01:53
Surr: Dibromofluoromethane	84.8			70-130	%REC	1	11/12/2019 23:08
Surr: Dibromofluoromethane	89.2			70-130	%REC	10	11/15/2019 01:53
Surr: Toluene-d8	116			70-130	%REC	1	11/12/2019 23:08
Surr: Toluene-d8	104			70-130	%REC	10	11/15/2019 01:53
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	5.9		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	30		0.39	1.3	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	21		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.95		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.3		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB04) @ 20-21.5'
 Collection Date: 11/6/2019 12:35 PM

Work Order: 19110544
 Lab ID: 19110544-07
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	8.6		3.6	6.3	mg/Kg-dry	1	11/11/2019 23:18
Surr: 4-Terphenyl-d14	58.7			33-111	%REC	1	11/11/2019 23:18
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	74		3.6	8.5	mg/Kg	1	11/13/2019 18:17
Surr: Toluene-d8	97.5			71-123	%REC	1	11/13/2019 18:17
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.030		0.0026	0.026	mg/Kg-dry	1	11/13/2019 11:23
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	21		0.056	0.47	mg/Kg-dry	1	11/13/2019 13:47
Barium	390		4.3	4.7	mg/Kg-dry	10	11/13/2019 15:17
Cadmium	0.23		0.028	0.19	mg/Kg-dry	1	11/13/2019 13:47
Chromium	25		0.20	0.47	mg/Kg-dry	1	11/13/2019 13:47
Copper	21		0.47	0.47	mg/Kg-dry	1	11/13/2019 13:47
Lead	16		0.22	0.47	mg/Kg-dry	1	11/13/2019 13:47
Nickel	23		2.4	4.7	mg/Kg-dry	10	11/13/2019 15:17
Selenium	0.52		0.43	0.47	mg/Kg-dry	1	11/13/2019 13:47
Silver	0.063	J	0.061	0.47	mg/Kg-dry	1	11/13/2019 13:47
Zinc	51		0.91	0.93	mg/Kg-dry	1	11/13/2019 13:47
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	1,100		2.5	5.0	mg/L	10	11/14/2019 14:37
Magnesium	660		0.50	2.0	mg/L	10	11/14/2019 14:37
Sodium	580		0.45	2.0	mg/L	10	11/14/2019 14:37
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	3.4		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.0011	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Anthracene	U		0.0018	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Benzo(a)anthracene	U		0.0022	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Benzo(a)pyrene	U		0.0015	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Benzo(b)fluoranthene	U		0.0013	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Benzo(k)fluoranthene	U		0.0016	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Chrysene	U		0.0011	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Dibenzo(a,h)anthracene	U		0.0013	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Fluoranthene	U		0.0010	0.0054	mg/Kg-dry	1	11/11/2019 20:57

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB04) @ 20-21.5'
Collection Date: 11/6/2019 12:35 PM

Work Order: 19110544
Lab ID: 19110544-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0018	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Indeno(1,2,3-cd)pyrene	U		0.0020	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Naphthalene	U		0.0024	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Pyrene	U		0.00090	0.0054	mg/Kg-dry	1	11/11/2019 20:57
Surr: 2-Fluorobiphenyl	89.7			20-140	%REC	1	11/11/2019 20:57
Surr: 4-Terphenyl-d14	56.5			22-172	%REC	1	11/11/2019 20:57
Surr: Nitrobenzene-d5	90.4			28-140	%REC	1	11/11/2019 20:57
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	U		0.0087	0.051	mg/Kg-dry	1	11/15/2019 03:01
Ethylbenzene	U		0.011	0.051	mg/Kg-dry	1	11/15/2019 03:01
m,p-Xylene	0.18		0.068	0.10	mg/Kg-dry	1	11/15/2019 03:01
o-Xylene	U		0.020	0.051	mg/Kg-dry	1	11/15/2019 03:01
Toluene	U		0.014	0.051	mg/Kg-dry	1	11/15/2019 03:01
Xylenes, Total	0.18		0.068	0.15	mg/Kg-dry	1	11/15/2019 03:01
Surr: 1,2-Dichloroethane-d4	99.2			70-130	%REC	1	11/15/2019 03:01
Surr: 4-Bromofluorobenzene	97.2			70-130	%REC	1	11/15/2019 03:01
Surr: Dibromofluoromethane	79.6			70-130	%REC	1	11/15/2019 03:01
Surr: Toluene-d8	97.2			70-130	%REC	1	11/15/2019 03:01
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	14		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	25		0.40	1.3	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	23		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.21		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.6		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191106-L19-595 (SB04) @ 15-16.5'
 Collection Date: 11/6/2019 12:15 PM

Work Order: 19110544
 Lab ID: 19110544-08
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/11/19		Analyst: BCM
DRO (C10-C28)	23		3.5	6.2	mg/Kg-dry	1	11/11/2019 23:47
Surr: 4-Terphenyl-d14	51.2			33-111	%REC	1	11/11/2019 23:47
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/7/19		Analyst: BCM
GRO (C6-C10)	54		3.6	8.5	mg/Kg	1	11/13/2019 18:47
Surr: Toluene-d8	90.8			71-123	%REC	1	11/13/2019 18:47
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.036		0.0024	0.024	mg/Kg-dry	1	11/13/2019 11:26
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/12/19		Analyst: STP
Arsenic	24		0.060	0.50	mg/Kg-dry	1	11/13/2019 13:49
Barium	510		4.6	5.0	mg/Kg-dry	10	11/13/2019 15:19
Cadmium	0.34		0.030	0.20	mg/Kg-dry	1	11/13/2019 13:49
Chromium	26		0.22	0.50	mg/Kg-dry	1	11/13/2019 13:49
Copper	27		0.50	0.50	mg/Kg-dry	1	11/13/2019 13:49
Lead	21		0.24	0.50	mg/Kg-dry	1	11/13/2019 13:49
Nickel	25		2.6	5.0	mg/Kg-dry	10	11/13/2019 15:19
Selenium	0.82		0.46	0.50	mg/Kg-dry	1	11/13/2019 13:49
Silver	0.094	J	0.066	0.50	mg/Kg-dry	1	11/13/2019 13:49
Zinc	59		0.98	1.0	mg/Kg-dry	1	11/13/2019 13:49
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	1,800		2.5	5.0	mg/L	10	11/14/2019 14:39
Magnesium	880		0.50	2.0	mg/L	10	11/14/2019 14:39
Sodium	500		0.45	2.0	mg/L	10	11/14/2019 14:39
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	2.4		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.0010	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Anthracene	U		0.0018	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Benzo(a)anthracene	U		0.0022	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Benzo(a)pyrene	U		0.0015	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Benzo(b)fluoranthene	U		0.0013	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Benzo(k)fluoranthene	U		0.0016	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Chrysene	U		0.0011	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Dibenzo(a,h)anthracene	U		0.0013	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Fluoranthene	U		0.00099	0.0054	mg/Kg-dry	1	11/11/2019 21:12

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

ALS Group, USA

Date: 18-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191106-L19-595 (SB04) @ 15-16.5'
Collection Date: 11/6/2019 12:15 PM

Work Order: 19110544
Lab ID: 19110544-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0018	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Indeno(1,2,3-cd)pyrene	U		0.0019	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Naphthalene	U		0.0023	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Pyrene	U		0.00089	0.0054	mg/Kg-dry	1	11/11/2019 21:12
Surr: 2-Fluorobiphenyl	82.4			20-140	%REC	1	11/11/2019 21:12
Surr: 4-Terphenyl-d14	48.9			22-172	%REC	1	11/11/2019 21:12
Surr: Nitrobenzene-d5	77.5			28-140	%REC	1	11/11/2019 21:12
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/7/19		Analyst: WH
Benzene	U		0.0087	0.051	mg/Kg-dry	1	11/15/2019 14:32
Ethylbenzene	0.058		0.011	0.051	mg/Kg-dry	1	11/15/2019 14:32
m,p-Xylene	0.42		0.068	0.10	mg/Kg-dry	1	11/15/2019 14:32
o-Xylene	0.033	J	0.020	0.051	mg/Kg-dry	1	11/15/2019 14:32
Toluene	0.10		0.014	0.051	mg/Kg-dry	1	11/15/2019 14:32
Xylenes, Total	0.45		0.068	0.15	mg/Kg-dry	1	11/15/2019 14:32
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	1	11/15/2019 14:32
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	11/15/2019 14:32
Surr: Dibromofluoromethane	87.0			70-130	%REC	1	11/15/2019 14:32
Surr: Toluene-d8	96.9			70-130	%REC	1	11/15/2019 14:32
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	17		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	26		0.41	1.3	mg/Kg-dry	1	11/13/2019 16:20
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	24		0.10	0.10	% of sample	1	11/8/2019 14:25
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	7.88		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.7		0.10	0.100	°C	1	11/12/2019 10:10

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145364** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-145364-145364				Units: mg/Kg		Analysis Date: 11/11/2019 05:58 P		
Client ID:		Run ID: GC8_191111B				SeqNo: 6052545		Prep Date: 11/11/2019		DF: 1
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>	1.898	0	3.33	0	57	33-111	0			

LCS		Sample ID: DLCSS1-145364-145364				Units: mg/Kg		Analysis Date: 11/11/2019 06:27 P		
Client ID:		Run ID: GC8_191111B				SeqNo: 6049411		Prep Date: 11/11/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	353.3	5.0	333	0	106	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	1.91	0	3.33	0	57.4	33-111	0			

MS		Sample ID: 19110544-01A MS				Units: mg/Kg		Analysis Date: 11/11/2019 06:56 P		
Client ID: 20191106-L19-595 (SB05) @ 15-16.5'		Run ID: GC8_191111B				SeqNo: 6049412		Prep Date: 11/11/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	1311	4.9	327.6	1513	-61.7	58-111	0			SO
<i>Surr: 4-Terphenyl-d14</i>	1.919	0	3.276	0	58.6	33-111	0			

MSD		Sample ID: 19110544-01A MSD				Units: mg/Kg		Analysis Date: 11/11/2019 07:25 P		
Client ID: 20191106-L19-595 (SB05) @ 15-16.5'		Run ID: GC8_191111B				SeqNo: 6049413		Prep Date: 11/11/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	1364	4.9	329.2	1513	-45.3	58-111	1311	3.98	30	SO
<i>Surr: 4-Terphenyl-d14</i>	2.152	0	3.292	0	65.4	33-111	1.919	11.4	30	

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145245** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-145245-145245				Units: µg/Kg-dry		Analysis Date: 11/7/2019 06:59 PM		
Client ID:		Run ID: GC9_191107B				SeqNo: 6041182		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	4508	0	5000	0	90.2	71-123	0			

LCS		Sample ID: LCS-145245-145245				Units: µg/Kg-dry		Analysis Date: 11/7/2019 06:00 PM		
Client ID:		Run ID: GC9_191107B				SeqNo: 6041181		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	522900	5,000	500000	0	105	71-123	0			
Surr: Toluene-d8	5550	0	5000	0	111	71-123	0			

MS		Sample ID: 19110436-01A MS				Units: µg/Kg-dry		Analysis Date: 11/7/2019 09:25 PM		
Client ID:		Run ID: GC9_191107B				SeqNo: 6041187		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	821100	7,700	765600	114100	92.4	71-123	0			
Surr: Toluene-d8	9360	0	7656	0	122	71-123	0			

MSD		Sample ID: 19110436-01A MSD				Units: µg/Kg-dry		Analysis Date: 11/7/2019 09:54 PM		
Client ID:		Run ID: GC9_191107B				SeqNo: 6041188		Prep Date: 11/7/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	1028000	7,100	712700	114100	128	71-123	821100	22.4	30	S
Surr: Toluene-d8	9706	0	7127	0	136	71-123	9360	3.64	30	S

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145521** Instrument ID **HG4** Method: **SW7471B**

MBLK				Sample ID: MBLK-145521-145521				Units: mg/Kg			Analysis Date: 11/13/2019 10:49 A			
Client ID:				Run ID: HG4_191113A				SeqNo: 6052041			Prep Date: 11/13/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Mercury	0.007417	0.020								J				

LCS		Sample ID: LCS-145521-145521				Units: mg/Kg		Analysis Date: 11/13/2019 10:51 A		
Client ID:		Run ID: HG4_191113A				SeqNo: 6052042		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1774	0.020	0.1665	0	107	80-120	0			

MS				Sample ID: 19110615-01BMS				Units: mg/Kg			Analysis Date: 11/13/2019 11:30 A			
Client ID:				Run ID: HG4_191113A				SeqNo: 6052058			Prep Date: 11/13/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Mercury		0.1821	0.019	0.1622	0.01985	100	75-125	0						

MSD				Sample ID: 19110615-01BMSD				Units: mg/Kg			Analysis Date: 11/13/2019 11:32 A			
Client ID:				Run ID: HG4_191113A				SeqNo: 6052059			Prep Date: 11/13/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Mercury		0.1879	0.019	0.1614	0.01985	104	75-125	0.1821	3.15	35				

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145492** Instrument ID **ICPMS4** Method: **SW6020A**

MBLK				Sample ID: MBLK-145492-145492				Units: mg/Kg		Analysis Date: 11/13/2019 01:27 P	
Client ID:			Run ID: ICPMS4_191113B			SeqNo: 6052356		Prep Date: 11/12/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	U	0.25									
Barium	U	0.25									
Cadmium	U	0.10									
Chromium	U	0.25									
Copper	U	0.25									
Lead	U	0.25									
Nickel	U	0.25									
Selenium	U	0.25									
Silver	U	0.25									
Zinc	U	0.50									

LCS				Sample ID: LCS-145492-145492				Units: mg/Kg			Analysis Date: 11/13/2019 01:32 P		
Client ID:			Run ID: ICPMS4_191113B				SeqNo: 6052359			Prep Date: 11/12/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Arsenic	4.976	0.25	5	0	99.5	80-120	0						
Barium	5.087	0.25	5	0	102	80-120	0						
Cadmium	5.066	0.10	5	0	101	80-120	0						
Chromium	5.305	0.25	5	0	106	80-120	0						
Copper	5.257	0.25	5	0	105	80-120	0						
Lead	5.174	0.25	5	0	103	80-120	0						
Nickel	5.114	0.25	5	0	102	80-120	0						
Selenium	4.957	0.25	5	0	99.1	80-120	0						
Silver	5.142	0.25	5	0	103	80-120	0						
Zinc	5.529	0.50	5	0	111	80-120	0						

MS				Sample ID: 19110877-04AMS			Units: mg/Kg		Analysis Date: 11/13/2019 02:01 P		
Client ID:			Run ID: ICPMS4_191113B			SeqNo: 6052880		Prep Date: 11/12/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	17	0.35	7.052	10.47	92.6	75-125	0				
Barium	94.36	0.35	7.052	74.56	281	75-125	0			SO	
Cadmium	6.167	0.14	7.052	0.4181	81.5	75-125	0				
Chromium	19.65	0.35	7.052	10.47	130	75-125	0			S	
Copper	25.98	0.35	7.052	18.97	99.5	75-125	0				
Lead	127.4	0.35	7.052	104	333	75-125	0			SEO	
Nickel	20.71	0.35	7.052	14.25	91.6	75-125	0				
Selenium	6.33	0.35	7.052	0.4461	83.4	75-125	0				
Silver	5.877	0.35	7.052	0.02871	82.9	75-125	0				
Zinc	82.32	0.71	7.052	75.1	102	75-125	0			O	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145492** Instrument ID **ICPMS4** Method: **SW6020A**

MSD		Sample ID: 19110877-04AMSD				Units: mg/Kg		Analysis Date: 11/13/2019 02:03 P		
Client ID:		Run ID: ICPMS4_191113B				SeqNo: 6052881		Prep Date: 11/12/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	18.92	0.36	7.153	10.47	118	75-125	17	10.7	20	
Barium	91.86	0.36	7.153	74.56	242	75-125	94.36	2.68	20	SO
Cadmium	6.325	0.14	7.153	0.4181	82.6	75-125	6.167	2.53	20	
Chromium	19.78	0.36	7.153	10.47	130	75-125	19.65	0.682	20	S
Copper	26.81	0.36	7.153	18.97	110	75-125	25.98	3.13	20	
Lead	165.6	0.36	7.153	104	862	75-125	127.4	26.1	20	SREO
Nickel	20.23	0.36	7.153	14.25	83.6	75-125	20.71	2.35	20	
Selenium	6.558	0.36	7.153	0.4461	85.4	75-125	6.33	3.53	20	
Silver	5.945	0.36	7.153	0.02871	82.7	75-125	5.877	1.15	20	
Zinc	95.45	0.72	7.153	75.1	284	75-125	82.32	14.8	20	SO

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145616** Instrument ID **ICPMS4** Method: **SW6020A**

DUP				Sample ID: 19110622-04ADUP				Units: mg/L			Analysis Date: 11/14/2019 02:51 P			
Client ID:				Run ID: ICPMS4_191114A				SeqNo: 6056528			Prep Date: 11/14/2019		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Calcium	632.6	5.0	0	0	0	0-0	751.2	17.1						
Magnesium	695.5	2.0	0	0	0	0-0	598.6	15						
Sodium	689.3	2.0	0	0	0	0-0	564.2	20						

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

Batch ID: **145616** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP				Sample ID: 19110622-04ADUP				Units: none			Analysis Date: 11/14/2019			
Client ID:				Run ID: SAR_191114A				SeqNo: 6056647			Prep Date: 11/14/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Sodium Adsorption Ratio		4.5	0.010	0	0	0		3.726	18.8	50				

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110544
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145408 Instrument ID SVMS6 Method: SW846 8270D

MBLK				Sample ID: SBLKS1-145408-145408				Units: µg/Kg			Analysis Date: 11/11/2019 05:20 P		
Client ID:			Run ID: SVMS6_191111A				SeqNo: 6048853		Prep Date: 11/11/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Acenaphthene	U	4.2											
Anthracene	U	4.2											
Benzo(a)anthracene	U	4.2											
Benzo(a)pyrene	U	4.2											
Benzo(b)fluoranthene	U	4.2											
Benzo(k)fluoranthene	U	4.2											
Chrysene	U	4.2											
Dibenzo(a,h)anthracene	U	4.2											
Fluoranthene	U	4.2											
Fluorene	U	4.2											
Indeno(1,2,3-cd)pyrene	U	4.2											
Naphthalene	U	4.2											
Pyrene	U	4.2											
Surr: 2-Fluorobiphenyl	3128	0	3333	0	93.8	20-140	0						
Surr: 4-Terphenyl-d14	2296	0	3333	0	68.9	22-172	0						
Surr: Nitrobenzene-d5	3054	0	3333	0	91.6	28-140	0						

LCS				Sample ID: SLCSS1-145408-145408			Units: µg/Kg		Analysis Date: 11/11/2019 05:36 P		
Client ID:			Run ID: SVMS6_191111A			SeqNo: 6048854		Prep Date: 11/11/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	948.5	4.2	1333	0	71.2	40-140	0				
Anthracene	1034	4.2	1333	0	77.5	40-140	0				
Benzo(a)anthracene	1086	4.2	1333	0	81.4	40-140	0				
Benzo(a)pyrene	1097	4.2	1333	0	82.3	40-140	0				
Benzo(b)fluoranthene	1099	4.2	1333	0	82.5	40-140	0				
Benzo(k)fluoranthene	1101	4.2	1333	0	82.6	40-140	0				
Chrysene	1013	4.2	1333	0	76	40-140	0				
Dibenzo(a,h)anthracene	1117	4.2	1333	0	83.8	40-140	0				
Fluoranthene	993.6	4.2	1333	0	74.5	40-140	0				
Fluorene	1004	4.2	1333	0	75.3	40-140	0				
Indeno(1,2,3-cd)pyrene	1153	4.2	1333	0	86.5	40-140	0				
Naphthalene	1053	4.2	1333	0	79	40-140	0				
Pyrene	987.8	4.2	1333	0	74.1	40-140	0				
Surr: 2-Fluorobiphenyl	2765	0	3333	0	83	20-140	0				
Surr: 4-Terphenyl-d14	2096	0	3333	0	62.9	22-172	0				
Surr: Nitrobenzene-d5	2898	0	3333	0	86.9	28-140	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110544
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145408 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 19110740-02B MS			Units: µg/Kg		Analysis Date: 11/11/2019 05:51 P		
Client ID:			Run ID: SVMS6_191111A			SeqNo: 6048855		Prep Date: 11/11/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1036	4.1	1322	0	78.4	40-140	0				
Anthracene	1153	4.1	1322	35.81	84.5	40-140	0				
Benzo(a)anthracene	1285	4.1	1322	70.14	91.9	40-140	0				
Benzo(a)pyrene	1228	4.1	1322	74.17	87.3	40-140	0				
Benzo(b)fluoranthene	1353	4.1	1322	148.6	91.1	40-140	0				
Benzo(k)fluoranthene	1221	4.1	1322	37.81	89.5	40-140	0				
Chrysene	1101	4.1	1322	85.84	76.8	40-140	0				
Dibenzo(a,h)anthracene	1016	4.1	1322	7.707	76.2	40-140	0				
Fluoranthene	1555	4.1	1322	208.6	102	40-140	0				
Fluorene	1024	4.1	1322	3.901	77.2	40-140	0				
Indeno(1,2,3-cd)pyrene	1207	4.1	1322	51.62	87.4	40-140	0				
Naphthalene	1121	4.1	1322	0	84.8	40-140	0				
Pyrene	808.7	4.1	1322	95.58	53.9	40-140	0				
Surr: 2-Fluorobiphenyl	3005	0	3306	0	90.9	20-140	0				
Surr: 4-Terphenyl-d14	1640	0	3306	0	49.6	22-172	0				
Surr: Nitrobenzene-d5	2723	0	3306	0	82.4	28-140	0				

MSD				Sample ID: 19110740-02B MSD			Units: µg/Kg		Analysis Date: 11/11/2019 06:07 P		
Client ID:			Run ID: SVMS6_191111A			SeqNo: 6048856		Prep Date: 11/11/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1015	4.1	1300	0	78	40-140	1036	2.12	30		
Anthracene	1187	4.1	1300	35.81	88.5	40-140	1153	2.88	30		
Benzo(a)anthracene	1262	4.1	1300	70.14	91.6	40-140	1285	1.81	30		
Benzo(a)pyrene	1240	4.1	1300	74.17	89.7	40-140	1228	0.976	30		
Benzo(b)fluoranthene	1383	4.1	1300	148.6	94.9	40-140	1353	2.17	30		
Benzo(k)fluoranthene	1220	4.1	1300	37.81	90.9	40-140	1221	0.105	30		
Chrysene	1137	4.1	1300	85.84	80.8	40-140	1101	3.16	30		
Dibenzo(a,h)anthracene	930.2	4.1	1300	7.707	70.9	40-140	1016	8.79	30		
Fluoranthene	1576	4.1	1300	208.6	105	40-140	1555	1.34	30		
Fluorene	1009	4.1	1300	3.901	77.3	40-140	1024	1.47	30		
Indeno(1,2,3-cd)pyrene	1117	4.1	1300	51.62	82	40-140	1207	7.67	30		
Naphthalene	1106	4.1	1300	0	85	40-140	1121	1.38	30		
Pyrene	871	4.1	1300	95.58	59.6	40-140	808.7	7.42	30		
Surr: 2-Fluorobiphenyl	2922	0	3251	0	89.9	20-140	3005	2.8	0		
Surr: 4-Terphenyl-d14	1734	0	3251	0	53.3	22-172	1640	5.55	0		
Surr: Nitrobenzene-d5	2678	0	3251	0	82.4	28-140	2723	1.68	0		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145408** Instrument ID **SVMS6** Method: **SW846 8270D**

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110544
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145274** Instrument ID **VMS9** Method: **SW8260C**

MBLK				Sample ID: MBLK-145274-145274			Units: µg/Kg-dry		Analysis Date: 11/7/2019 09:18 PM		
Client ID:			Run ID: VMS9_191107B			SeqNo: 6042001		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	U	30									
Ethylbenzene	U	30									
m,p-Xylene	U	60									
o-Xylene	U	30									
Toluene	U	30									
Xylenes, Total	U	90									
Surr: 1,2-Dichloroethane-d4	1062	0	1000	0	106	70-130		0			
Surr: 4-Bromofluorobenzene	996.5	0	1000	0	99.6	70-130		0			
Surr: Dibromofluoromethane	917.5	0	1000	0	91.8	70-130		0			
Surr: Toluene-d8	974.5	0	1000	0	97.4	70-130		0			

LCS				Sample ID: LCS-145274-145274			Units: µg/Kg-dry		Analysis Date: 11/7/2019 08:15 PM		
Client ID:			Run ID: VMS9_191107B			SeqNo: 6042000		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1156	30	1000	0	116	75-125	0				
Ethylbenzene	1152	30	1000	0	115	75-125	0				
m,p-Xylene	2286	60	2000	0	114	80-125	0				
o-Xylene	1156	30	1000	0	116	75-125	0				
Toluene	1097	30	1000	0	110	70-125	0				
Xylenes, Total	3442	90	3000	0	115	75-125	0				
Surr: 1,2-Dichloroethane-d4	1050	0	1000	0	105	70-130	0				
Surr: 4-Bromofluorobenzene	1016	0	1000	0	102	70-130	0				
Surr: Dibromofluoromethane	1020	0	1000	0	102	70-130	0				
Surr: Toluene-d8	1009	0	1000	0	101	70-130	0				

MS				Sample ID: 19110360-08A MS			Units: µg/Kg-dry		Analysis Date: 11/8/2019 03:34 AM		
Client ID:			Run ID: VMS9_191107B			SeqNo: 6042017		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1438	44	1464	0	98.2	75-125	0				
Ethylbenzene	1424	44	1464	0	97.3	75-125	0				
m,p-Xylene	2831	88	2928	23.39	95.9	80-125	0				
o-Xylene	1433	44	1464	0	97.9	75-125	0				
Toluene	1334	44	1464	19.84	89.8	70-125	0				
Xylenes, Total	4264	130	4391	23	96.6	75-125	0				
Surr: 1,2-Dichloroethane-d4	1535	0	1464	0	105	70-130	0				
Surr: 4-Bromofluorobenzene	1556	0	1464	0	106	70-130	0				
Surr: Dibromofluoromethane	1399	0	1464	0	95.6	70-130	0				
Surr: Toluene-d8	1456	0	1464	0	99.4	70-130	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110544
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145274** Instrument ID **VMS9** Method: **SW8260C**

MSD					Sample ID: 19110360-08A MSD		Units: µg/Kg-dry		Analysis Date: 11/8/2019 03:50 AM		
Client ID:			Run ID: VMS9_191107B			SeqNo: 6042018		Prep Date: 11/7/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	819	30	1003	0	81.6	75-125	1438	54.9	30	R	
Ethylbenzene	760.8	30	1003	0	75.8	75-125	1424	60.7	30	R	
m,p-Xylene	1572	60	2006	23.39	77.2	80-125	2831	57.2	30	SR	
o-Xylene	804.9	30	1003	0	80.2	75-125	1433	56.1	30	R	
Toluene	717.2	30	1003	19.84	69.5	70-125	1334	60.2	30	SR	
Xylenes, Total	2377	90	3009	23	78.2	75-125	4264	56.8	30	R	
Surr: 1,2-Dichloroethane-d4	1062	0	1003	0	106	70-130	1535	36.4	30	R	
Surr: 4-Bromofluorobenzene	1052	0	1003	0	105	70-130	1556	38.7	30	R	
Surr: Dibromofluoromethane	974.4	0	1003	0	97.2	70-130	1399	35.8	30	R	
Surr: Toluene-d8	970.4	0	1003	0	96.8	70-130	1456	40	30	R	

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145445** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-145445-145445				Units: s.u.			Analysis Date: 11/12/2019 10:10 A			
Client ID:				Run ID: WETCHEM_191112K				SeqNo: 6049262			Prep Date: 11/11/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

pH 4.03 0.10 4 0 101 90-110 0

DUP		Sample ID: 19110615-01B DUP					Units: s.u.		Analysis Date: 11/12/2019 10:10 A		
Client ID:		Run ID: WETCHEM_191112K			SeqNo: 6049274		Prep Date: 11/11/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

pH 8.26 0.10 0 0 0 0-0 8.33 0.844 20

Temperature 22.7 0.10 0 0 0 22.7 0

DUP				Sample ID: 19110615-03B DUP				Units: s.u.			Analysis Date: 11/12/2019 10:10 A		
Client ID:				Run ID: WETCHEM_191112K				SeqNo: 6049277		Prep Date: 11/11/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

pH 5.99 0.10 0 0 0 0-0 5.87 2.02 20

Temperature 22.5 0.10 0 0 0 22.6 0.443

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145573** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-145573-145573				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130		SeqNo: 6052992		Prep Date: 11/13/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-145573-145573				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130		SeqNo: 6052993		Prep Date: 11/13/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.67 1.0 5 0 93.4 80-120 0

MS		Sample ID: 19110622-01A MS				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130		SeqNo: 6053003		Prep Date: 11/13/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.696 0.98 4.902 0.9126 56.8 75-125 0 S

MS		Sample ID: 19110622-01A MSI				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130		SeqNo: 6053005		Prep Date: 11/13/2019		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2080 99 2214 0.9126 93.9 75-125 0

MSD		Sample ID: 19110622-01A MSD				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130		SeqNo: 6053004		Prep Date: 11/13/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2.48 1.0 5 0.9126 31.3 75-125 3.696 39.4 20 SR

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
Work Order: 19110544
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145616 Instrument ID WETCHEM Method: USDA H60 Metho

DUP		Sample ID: 19110622-04A DUP				Units: mmhos/cm @25°		Analysis Date: 11/14/2019 02:16 P		
Client ID:		Run ID: WETCHEM_191114L				SeqNo: 6056557		Prep Date: 11/14/2019		DF: 20
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	11.6	0.10	0	0	0		11.2	3.51	50	

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110544
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **R274978** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R274978				Units: % of sample		Analysis Date: 11/8/2019 02:25 PM		
Client ID:		Run ID: MOIST_191108C				SeqNo: 6045906		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R274978				Units: % of sample		Analysis Date: 11/8/2019 02:25 PM		
Client ID:		Run ID: MOIST_191108C				SeqNo: 6045905		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.10 100 0 100 98-102 0

DUP				Sample ID: 19110560-02B DUP				Units: % of sample			Analysis Date: 11/8/2019 02:25 PM		
Client ID:				Run ID: MOIST_191108C				SeqNo: 6045898		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

Moisture 23.52 0.10 0 0 0 0-0 23.54 0.085 10

DUP				Sample ID: 19110560-04B DUP				Units: % of sample			Analysis Date: 11/8/2019 02:25 PM			
Client ID:				Run ID: MOIST_191108C				SeqNo: 6045901			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 20.16 0.10 0 0 0 0-0 18.2 10.2 10 R

The following samples were analyzed in this batch:

19110544-01A	19110544-02A	19110544-03A
19110544-04A	19110544-05A	19110544-06A
19110544-07A	19110544-08A	

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

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **07-Nov-19 09:30**

Work Order: **19110544**

Received by: **DS**

Checklist completed by Diane Shaw
eSignature

07-Nov-19
Date

Reviewed by: Chad Whelton
eSignature

07-Nov-19
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>3.2/3.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>11/7/2019 2:34:19 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:



19-Nov-2019

Jake Janicek
Caerus Oil and Gas LLC
143 Diamond Ave.
Parachute, CO 81635

Re: **L19-595 Assessment**

Work Order: **19110622**

Dear Jake,

ALS Environmental received 6 samples on 08-Nov-2019 08:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland 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 41.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

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: L19-595 Assessment
Work Order: 19110622

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>
19110622-01	20191107-L19-S95(SB06)@20-21.5'	Soil		11/7/2019 09:55	11/8/2019 08:30	<input type="checkbox"/>
19110622-02	20191107-L19-S95(SB06)@25-26.5'	Soil		11/7/2019 10:05	11/8/2019 08:30	<input type="checkbox"/>
19110622-03	20191107-L19-S95(SB07)@20-21.5'	Soil		11/7/2019 11:45	11/8/2019 08:30	<input type="checkbox"/>
19110622-04	20191107-L19-S95(SB07)@25-26.5'	Soil		11/7/2019 12:00	11/8/2019 08:30	<input type="checkbox"/>
19110622-05	20191107-L19-S95(SB08)@20-21.5'	Soil		11/7/2019 13:30	11/8/2019 08:30	<input type="checkbox"/>
19110622-06	20191107-L19-S95(SB08)@25-26.5'	Soil		11/7/2019 13:35	11/8/2019 08:30	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC**Project:** L19-595 Assessment**Work Order:** 19110622**Case Narrative**

Batch 145324, Method VOC_8260_S, Sample 19110622-05A: VOC surrogate recovery high due to matrix interference.

Batch 145573, Method CR6_7196_S, Sample 19110622-01A MSD: The RPD between the MS and MSD was outside the control limit for Hexavalent Chromium. The corresponding result in the parent sample should be considered estimated.

<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
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
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
°C	Degrees Celcius
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: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB06)@20-21.5'
Collection Date: 11/7/2019 09:55 AM

Work Order: 19110622
Lab ID: 19110622-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/12/19		Analyst: BCM
DRO (C10-C28)	7.3		3.3	5.8	mg/Kg-dry	1	11/12/2019 21:24
Surr: 4-Terphenyl-d14	61.6			33-111	%REC	1	11/12/2019 21:24
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/8/19		Analyst: BCM
GRO (C6-C10)	U		58	140	mg/Kg	20	11/16/2019 05:39
Surr: Toluene-d8	90.7			71-123	%REC	20	11/16/2019 05:39
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSB
Mercury	0.034		0.0023	0.023	mg/Kg-dry	1	11/13/2019 14:59
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/13/19		Analyst: STP
Arsenic	35		0.055	0.46	mg/Kg-dry	1	11/13/2019 17:22
Barium	460		4.2	4.6	mg/Kg-dry	10	11/14/2019 13:54
Cadmium	0.37		0.028	0.18	mg/Kg-dry	1	11/13/2019 17:22
Chromium	23		0.20	0.46	mg/Kg-dry	1	11/13/2019 17:22
Copper	23		0.46	0.46	mg/Kg-dry	1	11/13/2019 17:22
Lead	20		0.22	0.46	mg/Kg-dry	1	11/13/2019 17:22
Nickel	22		2.4	4.6	mg/Kg-dry	10	11/14/2019 13:54
Selenium	1.5		0.42	0.46	mg/Kg-dry	1	11/13/2019 17:22
Silver	0.069	J	0.061	0.46	mg/Kg-dry	1	11/13/2019 17:22
Zinc	54		0.90	0.92	mg/Kg-dry	1	11/13/2019 17:22
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	880		2.5	5.0	mg/L	10	11/14/2019 14:40
Magnesium	1,100		0.50	2.0	mg/L	10	11/14/2019 14:40
Sodium	550		0.45	2.0	mg/L	10	11/14/2019 14:40
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	2.9		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00094	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Anthracene	U		0.0016	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Benzo(a)anthracene	U		0.0020	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Benzo(a)pyrene	U		0.0013	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Benzo(b)fluoranthene	U		0.0012	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Benzo(k)fluoranthene	U		0.0014	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Chrysene	U		0.0010	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Dibenzo(a,h)anthracene	U		0.0011	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Fluoranthene	U		0.00090	0.0049	mg/Kg-dry	1	11/11/2019 21:28

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB06)@20-21.5'
Collection Date: 11/7/2019 09:55 AM

Work Order: 19110622
Lab ID: 19110622-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Naphthalene	U		0.0021	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Pyrene	U		0.00080	0.0049	mg/Kg-dry	1	11/11/2019 21:28
Surr: 2-Fluorobiphenyl	76.4			20-140	%REC	1	11/11/2019 21:28
Surr: 4-Terphenyl-d14	47.7			22-172	%REC	1	11/11/2019 21:28
Surr: Nitrobenzene-d5	73.3			28-140	%REC	1	11/11/2019 21:28
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/8/19		Analyst: JNS
Benzene	U		0.0072	0.042	mg/Kg-dry	1	11/15/2019 02:37
Ethylbenzene	U		0.0088	0.042	mg/Kg-dry	1	11/15/2019 02:37
m,p-Xylene	U		0.056	0.084	mg/Kg-dry	1	11/15/2019 02:37
o-Xylene	U		0.016	0.042	mg/Kg-dry	1	11/15/2019 02:37
Toluene	0.024	J	0.011	0.042	mg/Kg-dry	1	11/15/2019 02:37
Xylenes, Total	U		0.056	0.13	mg/Kg-dry	1	11/15/2019 02:37
Surr: 1,2-Dichloroethane-d4	98.2			70-130	%REC	1	11/15/2019 02:37
Surr: 4-Bromofluorobenzene	95.0			70-130	%REC	1	11/15/2019 02:37
Surr: Dibromofluoromethane	98.2			70-130	%REC	1	11/15/2019 02:37
Surr: Toluene-d8	99.8			70-130	%REC	1	11/15/2019 02:37
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	17		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	22		0.37	1.2	mg/Kg-dry	1	11/15/2019 08:30
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	1.1	J	0.98	1.2	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	16		0.10	0.10	% of sample	1	11/8/2019 15:27
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	7.95		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.7		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191107-L19-S95(SB06)@25-26.5'
 Collection Date: 11/7/2019 10:05 AM

Work Order: 19110622
 Lab ID: 19110622-02
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/12/19		Analyst: BCM
DRO (C10-C28)	7.4		3.3	5.8	mg/Kg-dry	1	11/12/2019 21:53
Surr: 4-Terphenyl-d14	60.0			33-111	%REC	1	11/12/2019 21:53
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/8/19		Analyst: BCM
GRO (C6-C10)	28		3.2	7.6	mg/Kg	1	11/15/2019 04:56
Surr: Toluene-d8	85.7			71-123	%REC	1	11/15/2019 04:56
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.025		0.0020	0.020	mg/Kg-dry	1	11/13/2019 15:01
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/13/19		Analyst: STP
Arsenic	20		0.058	0.48	mg/Kg-dry	1	11/13/2019 17:24
Barium	390		4.4	4.8	mg/Kg-dry	10	11/14/2019 13:56
Cadmium	0.26		0.029	0.19	mg/Kg-dry	1	11/13/2019 17:24
Chromium	27		0.21	0.48	mg/Kg-dry	1	11/13/2019 17:24
Copper	19		0.48	0.48	mg/Kg-dry	1	11/13/2019 17:24
Lead	19		0.23	0.48	mg/Kg-dry	1	11/13/2019 17:24
Nickel	23		2.5	4.8	mg/Kg-dry	10	11/14/2019 13:56
Selenium	1.0		0.44	0.48	mg/Kg-dry	1	11/13/2019 17:24
Silver	0.071	J	0.064	0.48	mg/Kg-dry	1	11/13/2019 17:24
Zinc	53		0.95	0.96	mg/Kg-dry	1	11/13/2019 17:24
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	1,500		2.5	5.0	mg/L	10	11/14/2019 14:42
Magnesium	1,200		0.50	2.0	mg/L	10	11/14/2019 14:42
Sodium	400		0.45	2.0	mg/L	10	11/14/2019 14:42
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	1.9		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00098	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Anthracene	U		0.0017	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Benzo(a)anthracene	U		0.0021	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Benzo(a)pyrene	U		0.0014	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Benzo(b)fluoranthene	U		0.0012	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Benzo(k)fluoranthene	U		0.0015	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Chrysene	U		0.0010	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Dibenzo(a,h)anthracene	U		0.0012	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Fluoranthene	U		0.00093	0.0050	mg/Kg-dry	1	11/11/2019 21:43

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB06)@25-26.5'
Collection Date: 11/7/2019 10:05 AM

Work Order: 19110622
Lab ID: 19110622-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Naphthalene	U		0.0022	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Pyrene	U		0.00083	0.0050	mg/Kg-dry	1	11/11/2019 21:43
Surr: 2-Fluorobiphenyl	36.2			20-140	%REC	1	11/11/2019 21:43
Surr: 4-Terphenyl-d14	23.9			22-172	%REC	1	11/11/2019 21:43
Surr: Nitrobenzene-d5	38.6			28-140	%REC	1	11/11/2019 21:43
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/8/19		Analyst: BG
Benzene	U		0.0078	0.046	mg/Kg-dry	1	11/15/2019 01:49
Ethylbenzene	U		0.0096	0.046	mg/Kg-dry	1	11/15/2019 01:49
m,p-Xylene	U		0.061	0.091	mg/Kg-dry	1	11/15/2019 01:49
o-Xylene	U		0.018	0.046	mg/Kg-dry	1	11/15/2019 01:49
Toluene	0.073		0.012	0.046	mg/Kg-dry	1	11/15/2019 01:49
Xylenes, Total	U		0.061	0.14	mg/Kg-dry	1	11/15/2019 01:49
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	11/15/2019 01:49
Surr: 4-Bromofluorobenzene	99.9			70-130	%REC	1	11/15/2019 01:49
Surr: Dibromofluoromethane	92.5			70-130	%REC	1	11/15/2019 01:49
Surr: Toluene-d8	102			70-130	%REC	1	11/15/2019 01:49
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	19		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	25		0.38	1.2	mg/Kg-dry	1	11/15/2019 08:30
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/13/19		Analyst: RZM
Chromium, Hexavalent	1.1	J	1.0	1.2	mg/Kg-dry	1	11/13/2019 15:38
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	11/8/2019 15:27
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.13		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.7		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB07)@20-21.5'
Collection Date: 11/7/2019 11:45 AM

Work Order: 19110622
Lab ID: 19110622-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/12/19		Analyst: BCM
DRO (C10-C28)	U		3.5	6.1	mg/Kg-dry	1	11/12/2019 22:22
Surr: 4-Terphenyl-d14	65.0			33-111	%REC	1	11/12/2019 22:22
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/8/19		Analyst: BCM
GRO (C6-C10)	15		3.1	7.4	mg/Kg	1	11/15/2019 05:25
Surr: Toluene-d8	83.7			71-123	%REC	1	11/15/2019 05:25
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSB
Mercury	0.025		0.0020	0.020	mg/Kg-dry	1	11/13/2019 15:03
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/13/19		Analyst: STP
Arsenic	24		0.058	0.49	mg/Kg-dry	1	11/13/2019 17:26
Barium	410		4.5	4.9	mg/Kg-dry	10	11/14/2019 13:58
Cadmium	0.29		0.029	0.19	mg/Kg-dry	1	11/13/2019 17:26
Chromium	28		0.21	0.49	mg/Kg-dry	1	11/13/2019 17:26
Copper	21		0.49	0.49	mg/Kg-dry	1	11/13/2019 17:26
Lead	17		0.23	0.49	mg/Kg-dry	1	11/13/2019 17:26
Nickel	17		0.25	0.49	mg/Kg-dry	1	11/13/2019 17:26
Selenium	0.76		0.45	0.49	mg/Kg-dry	1	11/13/2019 17:26
Silver	0.078	J	0.064	0.49	mg/Kg-dry	1	11/13/2019 17:26
Zinc	48		0.95	0.97	mg/Kg-dry	1	11/13/2019 17:26
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	33		2.5	5.0	mg/L	10	11/14/2019 14:47
Magnesium	50		0.50	2.0	mg/L	10	11/14/2019 14:47
Sodium	640		0.45	2.0	mg/L	10	11/14/2019 14:47
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	16		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00098	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Anthracene	U		0.0017	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Benzo(a)anthracene	U		0.0021	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Benzo(a)pyrene	U		0.0014	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Benzo(b)fluoranthene	U		0.0012	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Benzo(k)fluoranthene	U		0.0015	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Chrysene	U		0.0010	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Dibenzo(a,h)anthracene	U		0.0012	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Fluoranthene	U		0.00093	0.0050	mg/Kg-dry	1	11/11/2019 21:59

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191107-L19-S95(SB07)@20-21.5'
 Collection Date: 11/7/2019 11:45 AM

Work Order: 19110622
 Lab ID: 19110622-03
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Naphthalene	U		0.0022	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Pyrene	U		0.00083	0.0050	mg/Kg-dry	1	11/11/2019 21:59
Surr: 2-Fluorobiphenyl	89.0			20-140	%REC	1	11/11/2019 21:59
Surr: 4-Terphenyl-d14	59.2			22-172	%REC	1	11/11/2019 21:59
Surr: Nitrobenzene-d5	84.7			28-140	%REC	1	11/11/2019 21:59
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/8/19		Analyst: BG
Benzene	U		0.0076	0.045	mg/Kg-dry	1	11/15/2019 02:06
Ethylbenzene	U		0.0094	0.045	mg/Kg-dry	1	11/15/2019 02:06
m,p-Xylene	U		0.059	0.089	mg/Kg-dry	1	11/15/2019 02:06
o-Xylene	U		0.017	0.045	mg/Kg-dry	1	11/15/2019 02:06
Toluene	U		0.012	0.045	mg/Kg-dry	1	11/15/2019 02:06
Xylenes, Total	U		0.059	0.13	mg/Kg-dry	1	11/15/2019 02:06
Surr: 1,2-Dichloroethane-d4	106			70-130	%REC	1	11/15/2019 02:06
Surr: 4-Bromofluorobenzene	94.8			70-130	%REC	1	11/15/2019 02:06
Surr: Dibromofluoromethane	93.1			70-130	%REC	1	11/15/2019 02:06
Surr: Toluene-d8	100			70-130	%REC	1	11/15/2019 02:06
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	3.8		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	27		0.38	1.2	mg/Kg-dry	1	11/15/2019 08:30
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/14/19		Analyst: RZM
Chromium, Hexavalent	1.1	J	1.0	1.2	mg/Kg-dry	1	11/14/2019 16:01
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	19		0.10	0.10	% of sample	1	11/8/2019 15:27
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.94		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.6		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191107-L19-S95(SB07)@25-26.5'
 Collection Date: 11/7/2019 12:00 PM

Work Order: 19110622
 Lab ID: 19110622-04
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/12/19		Analyst: BCM
DRO (C10-C28)	U		3.6	6.3	mg/Kg-dry	1	11/12/2019 22:51
Surr: 4-Terphenyl-d14	55.1			33-111	%REC	1	11/12/2019 22:51
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/8/19		Analyst: BCM
GRO (C6-C10)	13		3.5	8.3	mg/Kg	1	11/15/2019 05:54
Surr: Toluene-d8	89.2			71-123	%REC	1	11/15/2019 05:54
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSB
Mercury	0.024		0.0021	0.021	mg/Kg-dry	1	11/13/2019 15:06
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/13/19		Analyst: STP
Arsenic	27		0.052	0.43	mg/Kg-dry	1	11/13/2019 17:28
Barium	510		4.0	4.3	mg/Kg-dry	10	11/14/2019 14:00
Cadmium	0.18		0.026	0.17	mg/Kg-dry	1	11/13/2019 17:28
Chromium	20		0.19	0.43	mg/Kg-dry	1	11/13/2019 17:28
Copper	23		0.43	0.43	mg/Kg-dry	1	11/13/2019 17:28
Lead	16		0.21	0.43	mg/Kg-dry	1	11/13/2019 17:28
Nickel	19		2.2	4.3	mg/Kg-dry	10	11/14/2019 14:00
Selenium	1.0		0.40	0.43	mg/Kg-dry	1	11/13/2019 17:28
Silver	0.064	J	0.057	0.43	mg/Kg-dry	1	11/13/2019 17:28
Zinc	43		0.84	0.86	mg/Kg-dry	1	11/13/2019 17:28
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Calcium	750		2.5	5.0	mg/L	10	11/14/2019 14:49
Magnesium	600		0.50	2.0	mg/L	10	11/14/2019 14:49
Sodium	560		0.45	2.0	mg/L	10	11/14/2019 14:49
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: STP
Sodium Adsorption Ratio	3.7		0.010	0.010	none	1	11/14/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.0010	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Anthracene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Benzo(a)anthracene	U		0.0021	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Benzo(a)pyrene	U		0.0014	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Benzo(b)fluoranthene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Benzo(k)fluoranthene	U		0.0015	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Chrysene	U		0.0011	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Dibenzo(a,h)anthracene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Fluoranthene	U		0.00095	0.0051	mg/Kg-dry	1	11/11/2019 22:14

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB07)@25-26.5'
Collection Date: 11/7/2019 12:00 PM

Work Order: 19110622
Lab ID: 19110622-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Naphthalene	U		0.0022	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Pyrene	U		0.00085	0.0051	mg/Kg-dry	1	11/11/2019 22:14
Surr: 2-Fluorobiphenyl	97.7			20-140	%REC	1	11/11/2019 22:14
Surr: 4-Terphenyl-d14	71.2			22-172	%REC	1	11/11/2019 22:14
Surr: Nitrobenzene-d5	92.1			28-140	%REC	1	11/11/2019 22:14
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/8/19		Analyst: JNS
Benzene	U		0.0085	0.050	mg/Kg-dry	1	11/15/2019 02:54
Ethylbenzene	U		0.010	0.050	mg/Kg-dry	1	11/15/2019 02:54
m,p-Xylene	U		0.066	0.099	mg/Kg-dry	1	11/15/2019 02:54
o-Xylene	U		0.019	0.050	mg/Kg-dry	1	11/15/2019 02:54
Toluene	U		0.014	0.050	mg/Kg-dry	1	11/15/2019 02:54
Xylenes, Total	U		0.066	0.15	mg/Kg-dry	1	11/15/2019 02:54
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	11/15/2019 02:54
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	11/15/2019 02:54
Surr: Dibromofluoromethane	99.8			70-130	%REC	1	11/15/2019 02:54
Surr: Toluene-d8	99.0			70-130	%REC	1	11/15/2019 02:54
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/14/19		Analyst: QTN
Electrical Conductivity @ Saturation	11		0.011	0.10	mmhos/cm @25°	20	11/14/2019 14:16
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	20		0.39	1.3	mg/Kg-dry	1	11/15/2019 08:30
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/14/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/14/2019 16:01
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	21		0.10	0.10	% of sample	1	11/11/2019 10:30
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.30		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.6		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
 Project: L19-595 Assessment
 Sample ID: 20191107-L19-S95(SB08)@20-21.5'
 Collection Date: 11/7/2019 01:30 PM

Work Order: 19110622
 Lab ID: 19110622-05
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/12/19		Analyst: BCM
DRO (C10-C28)	18		3.4	6.0	mg/Kg-dry	1	11/12/2019 23:20
Surr: 4-Terphenyl-d14	60.1			33-111	%REC	1	11/12/2019 23:20
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/8/19		Analyst: BCM
GRO (C6-C10)	6.6	J	3.2	7.7	mg/Kg	1	11/15/2019 06:23
Surr: Toluene-d8	84.7			71-123	%REC	1	11/15/2019 06:23
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSH
Mercury	0.021		0.0021	0.021	mg/Kg-dry	1	11/13/2019 15:08
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/13/19		Analyst: STP
Arsenic	30		0.058	0.48	mg/Kg-dry	1	11/13/2019 17:29
Barium	390		4.4	4.8	mg/Kg-dry	10	11/14/2019 14:06
Cadmium	0.22		0.029	0.19	mg/Kg-dry	1	11/13/2019 17:29
Chromium	21		0.21	0.48	mg/Kg-dry	1	11/13/2019 17:29
Copper	25		0.48	0.48	mg/Kg-dry	1	11/13/2019 17:29
Lead	17		0.23	0.48	mg/Kg-dry	1	11/13/2019 17:29
Nickel	17		0.25	0.48	mg/Kg-dry	1	11/13/2019 17:29
Selenium	0.50		0.44	0.48	mg/Kg-dry	1	11/13/2019 17:29
Silver	0.075	J	0.064	0.48	mg/Kg-dry	1	11/13/2019 17:29
Zinc	52		0.95	0.97	mg/Kg-dry	1	11/13/2019 17:29
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/15/19		Analyst: STP
Calcium	210		2.5	5.0	mg/L	10	11/15/2019 14:27
Magnesium	260		0.50	2.0	mg/L	10	11/15/2019 14:27
Sodium	360		0.45	2.0	mg/L	10	11/15/2019 14:27
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/15/19		Analyst: STP
Sodium Adsorption Ratio	4.0		0.010	0.010	none	1	11/15/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00099	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Anthracene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Benzo(a)anthracene	0.021		0.0021	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Benzo(a)pyrene	0.0093		0.0014	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Benzo(b)fluoranthene	0.015		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Benzo(k)fluoranthene	0.0048	J	0.0015	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Chrysene	0.030		0.0010	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Dibenzo(a,h)anthracene	U		0.0012	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Fluoranthene	0.022		0.00094	0.0051	mg/Kg-dry	1	11/11/2019 22:30

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB08)@20-21.5'
Collection Date: 11/7/2019 01:30 PM

Work Order: 19110622
Lab ID: 19110622-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Naphthalene	U		0.0022	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Pyrene	0.011		0.00084	0.0051	mg/Kg-dry	1	11/11/2019 22:30
Surr: 2-Fluorobiphenyl	82.6			20-140	%REC	1	11/11/2019 22:30
Surr: 4-Terphenyl-d14	57.2			22-172	%REC	1	11/11/2019 22:30
Surr: Nitrobenzene-d5	77.1			28-140	%REC	1	11/11/2019 22:30
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/8/19		Analyst: BG
Benzene	U		0.0079	0.046	mg/Kg-dry	1	11/15/2019 01:15
Ethylbenzene	U		0.0097	0.046	mg/Kg-dry	1	11/15/2019 01:15
m,p-Xylene	U		0.061	0.092	mg/Kg-dry	1	11/15/2019 01:15
o-Xylene	U		0.018	0.046	mg/Kg-dry	1	11/15/2019 01:15
Toluene	0.014	J	0.013	0.046	mg/Kg-dry	1	11/15/2019 01:15
Xylenes, Total	U		0.061	0.14	mg/Kg-dry	1	11/15/2019 01:15
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	11/15/2019 01:15
Surr: 4-Bromofluorobenzene	96.2			70-130	%REC	1	11/15/2019 01:15
Surr: Dibromofluoromethane	93.6			70-130	%REC	1	11/15/2019 01:15
Surr: Toluene-d8	97.8			70-130	%REC	1	11/15/2019 01:15
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/15/19		Analyst: QTN
Electrical Conductivity @ Saturation	0.29		0.00055	0.0050	mmhos/cm @25°	20	11/15/2019 15:48
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	21		0.38	1.2	mg/Kg-dry	1	11/15/2019 08:30
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/14/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	11/14/2019 16:01
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	19		0.10	0.10	% of sample	1	11/11/2019 10:30
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.51		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.6		0.10	0.100	°C	1	11/12/2019 10:10

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB08)@25-26.5'
Collection Date: 11/7/2019 01:35 PM

Work Order: 19110622
Lab ID: 19110622-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/12/19		Analyst: BCM
DRO (C10-C28)	U		3.3	5.8	mg/Kg-dry	1	11/12/2019 23:49
Surr: 4-Terphenyl-d14	65.9			33-111	%REC	1	11/12/2019 23:49
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/8/19		Analyst: BCM
GRO (C6-C10)	9.4		3.1	7.4	mg/Kg	1	11/15/2019 06:52
Surr: Toluene-d8	82.8			71-123	%REC	1	11/15/2019 06:52
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/13/19		Analyst: RSB
Mercury	0.073		0.0020	0.020	mg/Kg-dry	1	11/13/2019 15:10
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/13/19		Analyst: STP
Arsenic	27		0.054	0.45	mg/Kg-dry	1	11/13/2019 17:31
Barium	420		4.2	4.5	mg/Kg-dry	10	11/14/2019 14:08
Cadmium	0.34		0.027	0.18	mg/Kg-dry	1	11/13/2019 17:31
Chromium	22		0.20	0.45	mg/Kg-dry	1	11/13/2019 17:31
Copper	24		0.45	0.45	mg/Kg-dry	1	11/13/2019 17:31
Lead	18		0.22	0.45	mg/Kg-dry	1	11/13/2019 17:31
Nickel	22		2.4	4.5	mg/Kg-dry	10	11/14/2019 14:08
Selenium	0.57		0.42	0.45	mg/Kg-dry	1	11/13/2019 17:31
Silver	0.070	J	0.060	0.45	mg/Kg-dry	1	11/13/2019 17:31
Zinc	52		0.89	0.91	mg/Kg-dry	1	11/13/2019 17:31
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/15/19		Analyst: STP
Calcium	260		2.5	5.0	mg/L	10	11/15/2019 14:29
Magnesium	290		0.50	2.0	mg/L	10	11/15/2019 14:29
Sodium	470		0.45	2.0	mg/L	10	11/15/2019 14:29
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/15/19		Analyst: STP
Sodium Adsorption Ratio	4.8		0.010	0.010	none	1	11/15/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/11/19		Analyst: EEW
Acenaphthene	U		0.00092	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Anthracene	U		0.0016	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Benzo(a)anthracene	U		0.0020	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Benzo(a)pyrene	U		0.0013	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Benzo(b)fluoranthene	U		0.0011	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Benzo(k)fluoranthene	U		0.0014	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Chrysene	U		0.00098	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Dibenzo(a,h)anthracene	U		0.0011	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Fluoranthene	U		0.00088	0.0048	mg/Kg-dry	1	11/11/2019 22:45

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

ALS Group, USA

Date: 19-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191107-L19-S95(SB08)@25-26.5'
Collection Date: 11/7/2019 01:35 PM

Work Order: 19110622
Lab ID: 19110622-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Naphthalene	U		0.0021	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Pyrene	U		0.00079	0.0048	mg/Kg-dry	1	11/11/2019 22:45
Surr: 2-Fluorobiphenyl	90.8			20-140	%REC	1	11/11/2019 22:45
Surr: 4-Terphenyl-d14	59.0			22-172	%REC	1	11/11/2019 22:45
Surr: Nitrobenzene-d5	90.7			28-140	%REC	1	11/11/2019 22:45
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/8/19		Analyst: BG
Benzene	U		0.0076	0.044	mg/Kg-dry	1	11/15/2019 01:32
Ethylbenzene	U		0.0094	0.044	mg/Kg-dry	1	11/15/2019 01:32
m,p-Xylene	U		0.059	0.089	mg/Kg-dry	1	11/15/2019 01:32
o-Xylene	U		0.017	0.044	mg/Kg-dry	1	11/15/2019 01:32
Toluene	U		0.012	0.044	mg/Kg-dry	1	11/15/2019 01:32
Xylenes, Total	U		0.059	0.13	mg/Kg-dry	1	11/15/2019 01:32
Surr: 1,2-Dichloroethane-d4	107			70-130	%REC	1	11/15/2019 01:32
Surr: 4-Bromofluorobenzene	97.6			70-130	%REC	1	11/15/2019 01:32
Surr: Dibromofluoromethane	94.8			70-130	%REC	1	11/15/2019 01:32
Surr: Toluene-d8	97.6			70-130	%REC	1	11/15/2019 01:32
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/15/19		Analyst: QTN
Electrical Conductivity @ Saturation	0.34		0.00055	0.0050	mmhos/cm @25°	20	11/15/2019 15:48
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	22		0.37	1.2	mg/Kg-dry	1	11/15/2019 08:30
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/14/19		Analyst: RZM
Chromium, Hexavalent	U		0.97	1.1	mg/Kg-dry	1	11/14/2019 16:01
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	17		0.10	0.10	% of sample	1	11/11/2019 10:30
PH			Method: SW9045D		Prep: EXTRACT / 11/11/19		Analyst: ERW
pH	8.43		0.10	0.100	s.u.	1	11/12/2019 10:10
Temperature	22.6		0.10	0.100	°C	1	11/12/2019 10:10

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145429** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: dbllks1-145429-145429				Units: mg/Kg		Analysis Date: 11/12/2019 06:58 P		
Client ID:		Run ID: GC8_191112A				SeqNo: 6053407		Prep Date: 11/12/2019		DF: 1
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>	2.167	0	3.33	0	65.1	33-111	0			

LCS		Sample ID: DLCSS1-145429-145429				Units: mg/Kg		Analysis Date: 11/12/2019 07:27 P		
Client ID:		Run ID: GC8_191112A				SeqNo: 6053408		Prep Date: 11/12/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	355.2	5.0	333	0	107	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	2.087	0	3.33	0	62.7	33-111	0			

MS		Sample ID: 19110801-01A MS				Units: mg/Kg		Analysis Date: 11/12/2019 07:57 P		
Client ID:		Run ID: GC8_191112A				SeqNo: 6053409		Prep Date: 11/12/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	352.2	5.0	329.8	7.202	105	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	2.005	0	3.298	0	60.8	33-111	0			

MSD		Sample ID: 19110801-01A MSD				Units: mg/Kg		Analysis Date: 11/12/2019 08:26 P		
Client ID:		Run ID: GC8_191112A				SeqNo: 6053410		Prep Date: 11/12/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	343.3	5.0	331.5	7.202	101	58-111	343.3	0	30	
<i>Surr: 4-Terphenyl-d14</i>	1.903	0	3.315	0	57.4	33-111	1.903	0	30	

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145326 Instrument ID GC9 Method: SW8015D

MBLK		Sample ID: MBLK-145326-145326				Units: µg/Kg-dry		Analysis Date: 11/13/2019 01:53 P		
Client ID:		Run ID: GC9_191113A				SeqNo: 6055641		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10) U 5,000
 Surr: Toluene-d8 4202 0 5000 0 84 71-123 0

MBLK		Sample ID: MBLK-145326-145326				Units: µg/Kg-dry		Analysis Date: 11/15/2019 03:28 A		
Client ID:		Run ID: GC9_191114A				SeqNo: 6059253		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10) U 5,000
 Surr: Toluene-d8 4258 0 5000 0 85.2 71-123 0

LCS		Sample ID: LCS-145326-145326				Units: µg/Kg-dry		Analysis Date: 11/13/2019 12:54 P		
Client ID:		Run ID: GC9_191113A				SeqNo: 6055640		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10) 603700 5,000 500000 0 121 71-123 0
 Surr: Toluene-d8 5244 0 5000 0 105 71-123 0

LCS		Sample ID: LCS-145326-145326				Units: µg/Kg-dry		Analysis Date: 11/15/2019 02:00 A		
Client ID:		Run ID: GC9_191114A				SeqNo: 6059252		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10) 586200 5,000 500000 0 117 71-123 0
 Surr: Toluene-d8 5044 0 5000 0 101 71-123 0

MS		Sample ID: 19110622-04A MS				Units: µg/Kg-dry		Analysis Date: 11/15/2019 05:29 P		
Client ID: 20191107-L19-S95(SB07)@25-26.5'		Run ID: GC9_191114A				SeqNo: 6063865		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10) 941400 8,000 804800 13430 115 71-123 0
 Surr: Toluene-d8 8190 0 8048 0 102 71-123 0

MSD		Sample ID: 19110622-04A MSD				Units: µg/Kg-dry		Analysis Date: 11/15/2019 05:58 P		
Client ID: 20191107-L19-S95(SB07)@25-26.5'		Run ID: GC9_191114A				SeqNo: 6063866		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10) 827000 7,300 728900 13430 112 71-123 941400 12.9 30
 Surr: Toluene-d8 7466 0 7289 0 102 71-123 8190 9.26 30

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145326** Instrument ID **GC9** Method: **SW8015D**

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145560** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-145560-145560				Units: mg/Kg		Analysis Date: 11/13/2019 02:53 P		
Client ID:		Run ID: HG4_191113A				SeqNo: 6054567		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.007083	0.020								J

LCS		Sample ID: LCS-145560-145560				Units: mg/Kg		Analysis Date: 11/13/2019 02:55 P		
Client ID:		Run ID: HG4_191113A				SeqNo: 6054568		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1766	0.020	0.1665		0	106	80-120	0		

MS		Sample ID: 19110740-05BMS				Units: mg/Kg		Analysis Date: 11/13/2019 03:30 P		
Client ID:		Run ID: HG4_191113A				SeqNo: 6054584		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1563	0.018	0.1458	0.02009	93.4	75-125		0		

MSD		Sample ID: 19110740-05BMSD				Units: mg/Kg		Analysis Date: 11/13/2019 03:32 P		
Client ID:		Run ID: HG4_191113A				SeqNo: 6054585		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1668	0.018	0.1461	0.02009	100	75-125	0.1563	6.52	35	

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145543** Instrument ID **ICPMS4** Method: **SW6020A**

MBLK		Sample ID: MBLK-145543-145543				Units: mg/Kg		Analysis Date: 11/13/2019 05:15 P		
Client ID:		Run ID: ICPMS4_191113B				SeqNo: 6054090		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	U	0.25								
Copper	U	0.25								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								
Zinc	U	0.50								

LCS		Sample ID: LCS-145543-145543				Units: mg/Kg		Analysis Date: 11/13/2019 05:17 P		
Client ID:		Run ID: ICPMS4_191113B				SeqNo: 6054091		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.993	0.25	5	0	99.9	80-120	0			
Barium	5.021	0.25	5	0	100	80-120	0			
Cadmium	4.983	0.10	5	0	99.7	80-120	0			
Chromium	5.061	0.25	5	0	101	80-120	0			
Copper	5.048	0.25	5	0	101	80-120	0			
Lead	5.125	0.25	5	0	102	80-120	0			
Nickel	5.021	0.25	5	0	100	80-120	0			
Selenium	5.125	0.25	5	0	102	80-120	0			
Silver	4.93	0.25	5	0	98.6	80-120	0			
Zinc	5.282	0.50	5	0	106	80-120	0			

MS		Sample ID: 19110740-06BMS				Units: mg/Kg		Analysis Date: 11/13/2019 05:46 P		
Client ID:		Run ID: ICPMS4_191113B				SeqNo: 6054107		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.21	0.38	7.519	2.854	111	75-125	0			
Barium	46.02	0.38	7.519	28.16	237	75-125	0			S
Cadmium	6.495	0.15	7.519	0.07151	85.4	75-125	0			
Chromium	17.13	0.38	7.519	9.595	100	75-125	0			
Copper	14.55	0.38	7.519	7.837	89.3	75-125	0			
Lead	35.57	0.38	7.519	25.59	133	75-125	0			S
Nickel	14.34	0.38	7.519	6.779	101	75-125	0			
Selenium	7.217	0.38	7.519	0.1469	94	75-125	0			
Silver	6.402	0.38	7.519	0.03784	84.6	75-125	0			
Zinc	42.13	0.75	7.519	34.5	102	75-125	0			O

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145543** Instrument ID **ICPMS4** Method: **SW6020A**

MSD		Sample ID: 19110740-06BMSD				Units: mg/Kg		Analysis Date: 11/13/2019 05:48 P		
Client ID:		Run ID: ICPMS4_191113B				SeqNo: 6054108		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.93	0.38	7.576	2.854	107	75-125	11.21	2.5	20	
Barium	42.1	0.38	7.576	28.16	184	75-125	46.02	8.89	20	S
Cadmium	6.448	0.15	7.576	0.07151	84.2	75-125	6.495	0.718	20	
Chromium	17.14	0.38	7.576	9.595	99.6	75-125	17.13	0.0615	20	
Copper	16.57	0.38	7.576	7.837	115	75-125	14.55	13	20	
Lead	32.2	0.38	7.576	25.59	87.2	75-125	35.57	9.95	20	
Nickel	13.87	0.38	7.576	6.779	93.6	75-125	14.34	3.34	20	
Selenium	6.952	0.38	7.576	0.1469	89.8	75-125	7.217	3.73	20	
Silver	6.384	0.38	7.576	0.03784	83.8	75-125	6.402	0.287	20	
Zinc	39.25	0.76	7.576	34.5	62.7	75-125	42.13	7.08	20	SO

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145616** Instrument ID **ICPMS4** Method: **SW6020A**

DUP		Sample ID: 19110622-04ADUP				Units: mg/L		Analysis Date: 11/14/2019 02:51 P		
Client ID: 20191107-L19-S95(SB07)@25-26.5'		Run ID: ICPMS4_191114A		SeqNo: 6056528		Prep Date: 11/14/2019		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	632.6	5.0	0	0	0	0-0	751.2	17.1		
Magnesium	695.5	2.0	0	0	0	0-0	598.6	15		
Sodium	689.3	2.0	0	0	0	0-0	564.2	20		

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145704** Instrument ID **ICPMS4** Method: **SW6020A**

DUP		Sample ID: 19110637-01A DUP				Units: mg/L		Analysis Date: 11/15/2019 02:32 P		
Client ID:		Run ID: ICPMS4_191115A				SeqNo: 6059733		Prep Date: 11/15/2019		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	25.54	5.0	0	0	0	0-0	31.68	21.5		
Magnesium	2.177	2.0	0	0	0	0-0	2.943	29.9		
Sodium	125.9	2.0	0	0	0	0-0	144.8	14		

The following samples were analyzed in this batch:

19110622-05A	19110622-06A
--------------	--------------

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145616** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP		Sample ID: 19110622-04ADUP				Units: none		Analysis Date: 11/14/2019		
Client ID: 20191107-L19-S95(SB07)@25-26.5'		Run ID: SAR_191114A		SeqNo: 6056647		Prep Date: 11/14/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	4.5	0.010	0	0	0		3.726	18.8	50	

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145704 Instrument ID SAR Method: USDA H60 Metho

DUP		Sample ID: 19110637-01A DUP				Units: none		Analysis Date: 11/15/2019		
Client ID:		Run ID: SAR_191115A		SeqNo: 6060137		Prep Date: 11/15/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	6.424	0.010	0	0	0		6.598	2.68	50	

The following samples were analyzed in this batch:

19110622-05A	19110622-06A
--------------	--------------

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145408 Instrument ID SVMS6 Method: SW846 8270D

MBLK				Sample ID: SBLKS1-145408-145408				Units: µg/Kg			Analysis Date: 11/11/2019 05:20 P		
Client ID:			Run ID: SVMS6_191111A				SeqNo: 6048853		Prep Date: 11/11/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Acenaphthene	U	4.2											
Anthracene	U	4.2											
Benzo(a)anthracene	U	4.2											
Benzo(a)pyrene	U	4.2											
Benzo(b)fluoranthene	U	4.2											
Benzo(k)fluoranthene	U	4.2											
Chrysene	U	4.2											
Dibenzo(a,h)anthracene	U	4.2											
Fluoranthene	U	4.2											
Fluorene	U	4.2											
Indeno(1,2,3-cd)pyrene	U	4.2											
Naphthalene	U	4.2											
Pyrene	U	4.2											
Surr: 2-Fluorobiphenyl	3128	0	3333	0	93.8	20-140	0						
Surr: 4-Terphenyl-d14	2296	0	3333	0	68.9	22-172	0						
Surr: Nitrobenzene-d5	3054	0	3333	0	91.6	28-140	0						

LCS				Sample ID: SLCSS1-145408-145408			Units: µg/Kg		Analysis Date: 11/11/2019 05:36 P		
Client ID:			Run ID: SVMS6_191111A			SeqNo: 6048854		Prep Date: 11/11/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	948.5	4.2	1333	0	71.2	40-140	0				
Anthracene	1034	4.2	1333	0	77.5	40-140	0				
Benzo(a)anthracene	1086	4.2	1333	0	81.4	40-140	0				
Benzo(a)pyrene	1097	4.2	1333	0	82.3	40-140	0				
Benzo(b)fluoranthene	1099	4.2	1333	0	82.5	40-140	0				
Benzo(k)fluoranthene	1101	4.2	1333	0	82.6	40-140	0				
Chrysene	1013	4.2	1333	0	76	40-140	0				
Dibenzo(a,h)anthracene	1117	4.2	1333	0	83.8	40-140	0				
Fluoranthene	993.6	4.2	1333	0	74.5	40-140	0				
Fluorene	1004	4.2	1333	0	75.3	40-140	0				
Indeno(1,2,3-cd)pyrene	1153	4.2	1333	0	86.5	40-140	0				
Naphthalene	1053	4.2	1333	0	79	40-140	0				
Pyrene	987.8	4.2	1333	0	74.1	40-140	0				
Surr: 2-Fluorobiphenyl	2765	0	3333	0	83	20-140	0				
Surr: 4-Terphenyl-d14	2096	0	3333	0	62.9	22-172	0				
Surr: Nitrobenzene-d5	2898	0	3333	0	86.9	28-140	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145408 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 19110740-02B MS			Units: µg/Kg		Analysis Date: 11/11/2019 05:51 P	
Client ID:		Run ID: SVMS6_191111A		SeqNo: 6048855		Prep Date: 11/11/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1036	4.1	1322	0	78.4	40-140	0			
Anthracene	1153	4.1	1322	35.81	84.5	40-140	0			
Benzo(a)anthracene	1285	4.1	1322	70.14	91.9	40-140	0			
Benzo(a)pyrene	1228	4.1	1322	74.17	87.3	40-140	0			
Benzo(b)fluoranthene	1353	4.1	1322	148.6	91.1	40-140	0			
Benzo(k)fluoranthene	1221	4.1	1322	37.81	89.5	40-140	0			
Chrysene	1101	4.1	1322	85.84	76.8	40-140	0			
Dibenzo(a,h)anthracene	1016	4.1	1322	7.707	76.2	40-140	0			
Fluoranthene	1555	4.1	1322	208.6	102	40-140	0			
Fluorene	1024	4.1	1322	3.901	77.2	40-140	0			
Indeno(1,2,3-cd)pyrene	1207	4.1	1322	51.62	87.4	40-140	0			
Naphthalene	1121	4.1	1322	0	84.8	40-140	0			
Pyrene	808.7	4.1	1322	95.58	53.9	40-140	0			
Surr: 2-Fluorobiphenyl	3005	0	3306	0	90.9	20-140	0			
Surr: 4-Terphenyl-d14	1640	0	3306	0	49.6	22-172	0			
Surr: Nitrobenzene-d5	2723	0	3306	0	82.4	28-140	0			

MSD				Sample ID: 19110740-02B MSD			Units: µg/Kg		Analysis Date: 11/11/2019 06:07 P	
Client ID:		Run ID: SVMS6_191111A		SeqNo: 6048856		Prep Date: 11/11/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1015	4.1	1300	0	78	40-140	1036	2.12	30	
Anthracene	1187	4.1	1300	35.81	88.5	40-140	1153	2.88	30	
Benzo(a)anthracene	1262	4.1	1300	70.14	91.6	40-140	1285	1.81	30	
Benzo(a)pyrene	1240	4.1	1300	74.17	89.7	40-140	1228	0.976	30	
Benzo(b)fluoranthene	1383	4.1	1300	148.6	94.9	40-140	1353	2.17	30	
Benzo(k)fluoranthene	1220	4.1	1300	37.81	90.9	40-140	1221	0.105	30	
Chrysene	1137	4.1	1300	85.84	80.8	40-140	1101	3.16	30	
Dibenzo(a,h)anthracene	930.2	4.1	1300	7.707	70.9	40-140	1016	8.79	30	
Fluoranthene	1576	4.1	1300	208.6	105	40-140	1555	1.34	30	
Fluorene	1009	4.1	1300	3.901	77.3	40-140	1024	1.47	30	
Indeno(1,2,3-cd)pyrene	1117	4.1	1300	51.62	82	40-140	1207	7.67	30	
Naphthalene	1106	4.1	1300	0	85	40-140	1121	1.38	30	
Pyrene	871	4.1	1300	95.58	59.6	40-140	808.7	7.42	30	
Surr: 2-Fluorobiphenyl	2922	0	3251	0	89.9	20-140	3005	2.8	0	
Surr: 4-Terphenyl-d14	1734	0	3251	0	53.3	22-172	1640	5.55	0	
Surr: Nitrobenzene-d5	2678	0	3251	0	82.4	28-140	2723	1.68	0	

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145324** Instrument ID **VMS9** Method: **SW8260C**

MBLK				Sample ID: MBLK-145324-145324				Units: µg/Kg-dry			Analysis Date: 11/12/2019 08:00 P		
Client ID:			Run ID: VMS9_191112B				SeqNo: 6052597			Prep Date: 11/8/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	U	30											
Ethylbenzene	U	30											
m,p-Xylene	U	60											
o-Xylene	U	30											
Toluene	U	30											
Xylenes, Total	U	90											
Surr: 1,2-Dichloroethane-d4	1058	0	1000	0	106	70-130	0						
Surr: 4-Bromofluorobenzene	1002	0	1000	0	100	70-130	0						
Surr: Dibromofluoromethane	921.5	0	1000	0	92.2	70-130	0						
Surr: Toluene-d8	954	0	1000	0	95.4	70-130	0						

LCS				Sample ID: LCS-145324-145324				Units: µg/Kg-dry			Analysis Date: 11/13/2019 09:05 A			
Client ID:				Run ID: VMS9_191112B				SeqNo: 6052616			Prep Date: 11/8/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Benzene	1014	30	1000	0	101	75-125	0							
Ethylbenzene	1120	30	1000	0	112	75-125	0							
m,p-Xylene	2063	60	2000	0	103	80-125	0							
o-Xylene	1040	30	1000	0	104	75-125	0							
Toluene	1061	30	1000	0	106	70-125	0							
Xylenes, Total	3104	90	3000	0	103	75-125	0							
Surr: 1,2-Dichloroethane-d4	1036	0	1000	0	104	70-130	0							
Surr: 4-Bromofluorobenzene	1038	0	1000	0	104	70-130	0							
Surr: Dibromofluoromethane	1075	0	1000	0	108	70-130	0							
Surr: Toluene-d8	1004	0	1000	0	100	70-130	0							

MS				Sample ID: 19110622-04A MS			Units: µg/Kg-dry		Analysis Date: 11/15/2019 03:28 A		
Client ID: 20191107-L19-S95(SB07)@25-26.5'				Run ID: VMS8_191114A			SeqNo: 6059330		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	977.2	32	1062	0	92	75-125	0				
Ethylbenzene	996.8	32	1062	0	93.9	75-125	0				
m,p-Xylene	2062	64	2123	52	94.7	80-125	0				
o-Xylene	1046	32	1062	8.254	97.7	75-125	0				
Toluene	995.2	32	1062	11.56	92.7	70-125	0				
Xylenes, Total	3107	96	3185	0	97.6	75-125	0				
Surr: 1,2-Dichloroethane-d4	1039	0	1062	0	97.9	70-130	0				
Surr: 4-Bromofluorobenzene	1087	0	1062	0	102	70-130	0				
Surr: Dibromofluoromethane	1018	0	1062	0	95.8	70-130	0				
Surr: Toluene-d8	1086	0	1062	0	102	70-130	0				

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145324 Instrument ID VMS9 Method: SW8260C

MSD			Sample ID: 19110622-04A MSD			Units: µg/Kg-dry		Analysis Date: 11/15/2019 03:44 A		
Client ID: 20191107-L19-S95(SB07)@25-26.5'			Run ID: VMS8_191114A			SeqNo: 6059331		Prep Date: 11/8/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	842.3	28	941.6	0	89.4	75-125	977.2	14.8	30	
Ethylbenzene	838	28	941.6	0	89	75-125	996.8	17.3	30	
m,p-Xylene	1786	56	1883	52	92.1	80-125	2062	14.3	30	
o-Xylene	893.6	28	941.6	8.254	94	75-125	1046	15.7	30	
Toluene	864.9	28	941.6	11.56	90.6	70-125	995.2	14	30	
Xylenes, Total	2679	85	2825	0	94.8	75-125	3107	14.8	30	
Surr: 1,2-Dichloroethane-d4	898.8	0	941.6	0	95.4	70-130	1039	14.5	30	
Surr: 4-Bromofluorobenzene	941.1	0	941.6	0	100	70-130	1087	14.4	30	
Surr: Dibromofluoromethane	941.6	0	941.6	0	100	70-130	1018	7.75	30	
Surr: Toluene-d8	949.6	0	941.6	0	101	70-130	1086	13.4	30	

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145445** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-145445-145445				Units: s.u.			Analysis Date: 11/12/2019 10:10 A			
Client ID:				Run ID: WETCHEM_191112K				SeqNo: 6049262			Prep Date: 11/11/2019		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH 4.03 0.10 4 0 101 90-110 0

DUP		Sample ID: 19110615-01B DUP				Units: s.u.		Analysis Date: 11/12/2019 10:10 A		
Client ID:		Run ID: WETCHEM_191112K				SeqNo: 6049274		Prep Date: 11/11/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH 8.26 0.10 0 0 0 0-0 8.33 0.844 20

Temperature 22.7 0.10 0 0 0 22.7 0

DUP				Sample ID: 19110615-03B DUP				Units: s.u.			Analysis Date: 11/12/2019 10:10 A			
Client ID:				Run ID: WETCHEM_191112K				SeqNo: 6049277			Prep Date: 11/11/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

pH 5.99 0.10 0 0 0 0-0 5.87 2.02 20

Temperature 22.5 0.10 0 0 0 22.6 0.443

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A	19110622-05A	19110622-06A

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145573** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-145573-145573				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130				SeqNo: 6052992		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-145573-145573				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID:		Run ID: WETCHEM_1911130				SeqNo: 6052993		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.67 1.0 5 0 93.4 80-120 0

MS		Sample ID: 19110622-01A MS				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID: 20191107-L19-S95(SB06)@20-21.5'		Run ID: WETCHEM_1911130				SeqNo: 6053003		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.696 0.98 4.902 0.9126 56.8 75-125 0 S

MS		Sample ID: 19110622-01A MSI				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID: 20191107-L19-S95(SB06)@20-21.5'		Run ID: WETCHEM_1911130				SeqNo: 6053005		Prep Date: 11/13/2019		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2080 99 2214 0.9126 93.9 75-125 0

MSD		Sample ID: 19110622-01A MSD				Units: mg/Kg		Analysis Date: 11/13/2019 03:38 P		
Client ID: 20191107-L19-S95(SB06)@20-21.5'		Run ID: WETCHEM_1911130				SeqNo: 6053004		Prep Date: 11/13/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2.48 1.0 5 0.9126 31.3 75-125 3.696 39.4 20 SR

The following samples were analyzed in this batch:

19110622-01A	19110622-02A
--------------	--------------

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145616** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 19110622-04A DUP				Units: mmhos/cm @25°		Analysis Date: 11/14/2019 02:16 P		
Client ID: 20191107-L19-S95(SB07)@25-26.5'		Run ID: WETCHEM_191114L		SeqNo: 6056557		Prep Date: 11/14/2019		DF: 20		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	11.6	0.10	0	0	0		11.2	3.51	50	

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
19110622-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145627** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-145627-145627				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6056986		Prep Date: 11/14/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-145627-145627				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6056987		Prep Date: 11/14/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.03 1.0 5 0 80.6 80-120 0

MS		Sample ID: 19110818-01A MS				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6056993		Prep Date: 11/14/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.347 0.99 4.95 0.17 64.2 75-125 0 S

MS		Sample ID: 19110818-01A MSI				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6056995		Prep Date: 11/14/2019		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3079 100 3138 0.17 98.1 75-125 0

MS		Sample ID: 19111000-01A MS				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6057003		Prep Date: 11/14/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2.48 1.0 5 0.17 46.2 75-125 0 S

MS		Sample ID: 19111000-01A MSI				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6057005		Prep Date: 11/14/2019		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2320 100 2220 0.17 104 75-125 0

MSD		Sample ID: 19110818-01A MSD				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P		
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6056994		Prep Date: 11/14/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.347 0.99 4.95 0.17 64.2 75-125 3.347 0 20 S

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145627 Instrument ID WETCHEM Method: SW7196A

MSD		Sample ID: 19111000-01A MSD				Units: mg/Kg		Analysis Date: 11/14/2019 04:01 P			
Client ID:		Run ID: WETCHEM_191114Q				SeqNo: 6057004		Prep Date: 11/14/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chromium, Hexavalent	2.35	1.0	5	0.17	43.6	75-125	2.48	5.38	20	S	

The following samples were analyzed in this batch:

19110622-03A	19110622-04A	19110622-05A
19110622-06A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145704** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

Sample ID: 19110637-01A DUP					Units: mmhos/cm @25°		Analysis Date: 11/15/2019 03:48 P			
Client ID:			Run ID: WETCHEM_191115N		SeqNo: 6060097		Prep Date: 11/15/2019		DF: 20	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.0388	0.0050	0	0	0		0.04	3.05	50	

The following samples were analyzed in this batch:

19110622-05A	19110622-06A
--------------	--------------

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

Client: Caerus Oil and Gas LLC
 Work Order: 19110622
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **R274980** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R274980					Units: % of sample		Analysis Date: 11/8/2019 03:27 PM		
Client ID:			Run ID: MOIST_191108D			SeqNo: 6045941		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture U 0.10

LCS		Sample ID: LCS-R274980				Units: % of sample		Analysis Date: 11/8/2019 03:27 PM		
Client ID:			Run ID: MOIST_191108D			SeqNo: 6045940		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 99.98 0.10 100 0 100 98-102 0

DUP				Sample ID: 19110560-08B DUP				Units: % of sample		Analysis Date: 11/8/2019 03:27 PM			
Client ID:				Run ID: MOIST_191108D				SeqNo: 6045921		Prep Date:		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		

Moisture 21.83 0.10 0 0 0 0-0 21.46 1.71 10

DUP				Sample ID: 19110560-18B DUP				Units: % of sample			Analysis Date: 11/8/2019 03:27 PM												
Client ID:				Run ID: MOIST_191108D				SeqNo: 6045932			Prep Date:		DF: 1										
Analyte				Result		PQL		SPK Val		SPK Ref Value		%REC		Control Limit		RPD Ref Value		%RPD		RPD Limit		Qual	

Moisture 21.86 0.10 0 0 0 0-0 21.52 1.57 10

The following samples were analyzed in this batch:

19110622-01A	19110622-02A	19110622-03A
--------------	--------------	--------------

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

Client: Caerus Oil and Gas LLC
Work Order: 19110622
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **R275054** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R275054				Units: % of sample		Analysis Date: 11/11/2019 10:30 A		
Client ID:		Run ID: MOIST_191111C				SeqNo: 6048275		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R275054					Units: % of sample		Analysis Date: 11/11/2019 10:30 A		
Client ID:			Run ID: MOIST_191111C			SeqNo: 6048274		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.10 100 0 100 98-102 0

DUP		Sample ID: 19110637-04A DUP					Units: % of sample		Analysis Date: 11/11/2019 10:30 A		
Client ID:			Run ID: MOIST_191111C			SeqNo: 6048261		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 8.37 0.10 0 0 0 0-0 8.62 2.94 10

DUP		Sample ID: 19110637-07A DUP				Units: % of sample		Analysis Date: 11/11/2019 10:30 A		
Client ID:		Run ID: MOIST_191111C			SeqNo: 6048265		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 15.54 0.10 0 0 0 0-0 15.03 3.34 10

The following samples were analyzed in this batch:

19110622-04A	19110622-05A	19110622-06A
--------------	--------------	--------------

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



CHAIN OF CUSTODY

COC number (for client tracking)

Page 1 of 1

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 2810 1044 Fax: +852 2610 2021 Email: HongKong@alsglobal.com

168

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **08-Nov-19 08:30**

Work Order: **19110622**

Received by: **MJG**

Checklist completed by Matthew Gaylord
eSignature

08-Nov-19
Date

Reviewed by: Tom Bramish
eSignature

08-Nov-19
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>1.9/1.9C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>11/8/2019 10:21:44 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:



22-Nov-2019

Jake Janicek
Caerus Oil and Gas LLC
143 Diamond Ave.
Parachute, CO 81635

Re: **L19-595 Assessment**

Work Order: **19111193**

Dear Jake,

ALS Environmental received 4 samples on 15-Nov-2019 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland 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 28.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

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: L19-595 Assessment
Work Order: 19111193

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>
19111193-01	20191113-L19-595 (SB09) @ 35-36.5'	Soil		11/13/2019 10:45	11/15/2019 10:00	<input type="checkbox"/>
19111193-02	20191113-L19-595 (SB09) @ 20-21.5'	Soil		11/13/2019 10:15	11/15/2019 10:00	<input type="checkbox"/>
19111193-03	20191113-L19-595 (SB10) @ 20-21.5'	Soil		11/13/2019 12:15	11/15/2019 10:00	<input type="checkbox"/>
19111193-04	20191113-L19-595 (SB10) @ 25-26.5'	Soil		11/13/2019 12:30	11/15/2019 10:00	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC**Project:** L19-595 Assessment**Work Order:** 19111193**Case Narrative**

Batch 145756, Method DRO_8015_S, Sample DLCSS1-145756: The LCS recovery was above the upper control limit for DRO. The sample results for this batch 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
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
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
°C	Degrees Celcius
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: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB09) @ 35-36.5'
Collection Date: 11/13/2019 10:45 AM

Work Order: 19111193
Lab ID: 19111193-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/18/19		Analyst: BCM
DRO (C10-C28)	13		3.4	5.9	mg/Kg-dry	1	11/20/2019 07:36
<i>Surr: 4-Terphenyl-d14</i>	87.3			33-111	%REC	1	11/20/2019 07:36
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/15/19		Analyst: BCM
GRO (C6-C10)	U		3.0	7.2	mg/Kg	1	11/20/2019 05:04
<i>Surr: Toluene-d8</i>	83.9			71-123	%REC	1	11/20/2019 05:04
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/21/19		Analyst: RSB
Mercury	0.015	J	0.0023	0.023	mg/Kg-dry	1	11/21/2019 13:58
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/20/19		Analyst: STP
Arsenic	11		0.052	0.43	mg/Kg-dry	1	11/20/2019 21:17
Barium	460		4.0	4.3	mg/Kg-dry	10	11/22/2019 11:08
Cadmium	0.33		0.026	0.17	mg/Kg-dry	1	11/20/2019 21:17
Chromium	23		0.19	0.43	mg/Kg-dry	1	11/20/2019 21:17
Copper	30		4.3	4.3	mg/Kg-dry	10	11/22/2019 11:08
Lead	22		0.21	0.43	mg/Kg-dry	1	11/20/2019 21:17
Nickel	23		2.3	4.3	mg/Kg-dry	10	11/22/2019 11:08
Selenium	0.90		0.40	0.43	mg/Kg-dry	1	11/20/2019 21:17
Silver	U		0.057	0.43	mg/Kg-dry	1	11/20/2019 21:17
Zinc	65		0.85	0.87	mg/Kg-dry	1	11/20/2019 21:17
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Calcium	420		2.5	5.0	mg/L	10	11/22/2019 11:27
Magnesium	400		0.50	2.0	mg/L	10	11/22/2019 11:27
Sodium	170		0.45	2.0	mg/L	10	11/22/2019 11:27
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Sodium Adsorption Ratio	1.5		0.010	0.010	none	1	11/21/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/21/19		Analyst: EEW
Acenaphthene	U		0.00092	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Anthracene	U		0.0016	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Benzo(a)anthracene	U		0.0019	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Benzo(a)pyrene	U		0.0013	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Benzo(b)fluoranthene	U		0.0011	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Benzo(k)fluoranthene	U		0.0014	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Chrysene	U		0.00097	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Dibenzo(a,h)anthracene	U		0.0011	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Fluoranthene	U		0.00087	0.0047	mg/Kg-dry	1	11/21/2019 13:46

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB09) @ 35-36.5'
Collection Date: 11/13/2019 10:45 AM

Work Order: 19111193
Lab ID: 19111193-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Naphthalene	U		0.0021	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Pyrene	U		0.00078	0.0047	mg/Kg-dry	1	11/21/2019 13:46
Surr: 2-Fluorobiphenyl	82.8			20-140	%REC	1	11/21/2019 13:46
Surr: 4-Terphenyl-d14	53.9			22-172	%REC	1	11/21/2019 13:46
Surr: Nitrobenzene-d5	75.4			28-140	%REC	1	11/21/2019 13:46
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/15/19		Analyst: JNS
Benzene	U		0.0074	0.043	mg/Kg-dry	1	11/21/2019 19:36
Ethylbenzene	U		0.0091	0.043	mg/Kg-dry	1	11/21/2019 19:36
m,p-Xylene	U		0.057	0.086	mg/Kg-dry	1	11/21/2019 19:36
o-Xylene	U		0.017	0.043	mg/Kg-dry	1	11/21/2019 19:36
Toluene	U		0.012	0.043	mg/Kg-dry	1	11/21/2019 19:36
Xylenes, Total	U		0.057	0.13	mg/Kg-dry	1	11/21/2019 19:36
Surr: 1,2-Dichloroethane-d4	99.0			70-130	%REC	1	11/21/2019 19:36
Surr: 4-Bromofluorobenzene	99.6			70-130	%REC	1	11/21/2019 19:36
Surr: Dibromofluoromethane	83.7			70-130	%REC	1	11/21/2019 19:36
Surr: Toluene-d8	96.9			70-130	%REC	1	11/21/2019 19:36
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: DVD
Electrical Conductivity @ Saturation	0.34		0.00055	0.0050	mmhos/cm @25°	20	11/21/2019 12:20
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	23		0.37	1.2	mg/Kg-dry	1	11/21/2019 15:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/19/19		Analyst: RZM
Chromium, Hexavalent	U		0.99	1.2	mg/Kg-dry	1	11/19/2019 15:03
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	17		0.10	0.10	% of sample	1	11/19/2019 09:40
PH			Method: SW9045D		Prep: EXTRACT / 11/18/19		Analyst: DNW
pH	8.18		0.10	0.100	s.u.	1	11/18/2019 14:25
Temperature	21.6		0.10	0.100	°C	1	11/18/2019 14:25

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB09) @ 20-21.5'
Collection Date: 11/13/2019 10:15 AM

Work Order: 19111193
Lab ID: 19111193-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/18/19		Analyst: BCM
DRO (C10-C28)	17		3.3	5.8	mg/Kg-dry	1	11/20/2019 08:05
<i>Surr: 4-Terphenyl-d14</i>	68.5			33-111	%REC	1	11/20/2019 08:05
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/15/19		Analyst: BCM
GRO (C6-C10)	U		3.2	7.6	mg/Kg	1	11/20/2019 05:33
<i>Surr: Toluene-d8</i>	83.3			71-123	%REC	1	11/20/2019 05:33
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/21/19		Analyst: RSB
Mercury	0.025		0.0020	0.020	mg/Kg-dry	1	11/21/2019 14:00
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/20/19		Analyst: STP
Arsenic	31		0.056	0.46	mg/Kg-dry	1	11/20/2019 21:21
Barium	490		4.3	4.6	mg/Kg-dry	10	11/22/2019 11:10
Cadmium	0.32		0.028	0.19	mg/Kg-dry	1	11/20/2019 21:21
Chromium	22		0.20	0.46	mg/Kg-dry	1	11/20/2019 21:21
Copper	34		4.6	4.6	mg/Kg-dry	10	11/22/2019 11:10
Lead	21		0.22	0.46	mg/Kg-dry	1	11/20/2019 21:21
Nickel	25		2.4	4.6	mg/Kg-dry	10	11/22/2019 11:10
Selenium	0.69		0.43	0.46	mg/Kg-dry	1	11/20/2019 21:21
Silver	0.083	J	0.061	0.46	mg/Kg-dry	1	11/20/2019 21:21
Zinc	55		0.91	0.93	mg/Kg-dry	1	11/20/2019 21:21
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Calcium	59		2.5	5.0	mg/L	10	11/22/2019 11:29
Magnesium	54		0.50	2.0	mg/L	10	11/22/2019 11:29
Sodium	98		0.45	2.0	mg/L	10	11/22/2019 11:29
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Sodium Adsorption Ratio	2.2		0.010	0.010	none	1	11/21/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/21/19		Analyst: EEW
Acenaphthene	U		0.00096	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Anthracene	U		0.0017	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Benzo(a)anthracene	U		0.0020	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Benzo(a)pyrene	U		0.0013	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Benzo(b)fluoranthene	U		0.0012	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Benzo(k)fluoranthene	U		0.0015	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Chrysene	U		0.0010	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Dibenzo(a,h)anthracene	U		0.0012	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Fluoranthene	U		0.00091	0.0049	mg/Kg-dry	1	11/21/2019 14:01

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB09) @ 20-21.5'
Collection Date: 11/13/2019 10:15 AM

Work Order: 19111193
Lab ID: 19111193-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Naphthalene	U		0.0022	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Pyrene	U		0.00082	0.0049	mg/Kg-dry	1	11/21/2019 14:01
Surr: 2-Fluorobiphenyl	80.7			20-140	%REC	1	11/21/2019 14:01
Surr: 4-Terphenyl-d14	54.8			22-172	%REC	1	11/21/2019 14:01
Surr: Nitrobenzene-d5	83.2			28-140	%REC	1	11/21/2019 14:01
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/15/19		Analyst: JNS
Benzene	U		0.0078	0.045	mg/Kg-dry	1	11/21/2019 03:36
Ethylbenzene	0.011	J	0.0096	0.045	mg/Kg-dry	1	11/21/2019 03:36
m,p-Xylene	U		0.060	0.091	mg/Kg-dry	1	11/21/2019 03:36
o-Xylene	U		0.018	0.045	mg/Kg-dry	1	11/21/2019 03:36
Toluene	U		0.012	0.045	mg/Kg-dry	1	11/21/2019 03:36
Xylenes, Total	U		0.060	0.14	mg/Kg-dry	1	11/21/2019 03:36
Surr: 1,2-Dichloroethane-d4	80.4			70-130	%REC	1	11/21/2019 03:36
Surr: 4-Bromofluorobenzene	97.6			70-130	%REC	1	11/21/2019 03:36
Surr: Dibromofluoromethane	79.3			70-130	%REC	1	11/21/2019 03:36
Surr: Toluene-d8	94.0			70-130	%REC	1	11/21/2019 03:36
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: DVD
Electrical Conductivity @ Saturation	0.071		0.00055	0.0050	mmhos/cm @25°	20	11/21/2019 12:20
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	21		0.37	1.2	mg/Kg-dry	1	11/21/2019 15:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/19/19		Analyst: RZM
Chromium, Hexavalent	1.1	J	1.0	1.2	mg/Kg-dry	1	11/19/2019 15:03
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	17		0.10	0.10	% of sample	1	11/19/2019 09:40
PH			Method: SW9045D		Prep: EXTRACT / 11/18/19		Analyst: DNW
pH	8.75		0.10	0.100	s.u.	1	11/18/2019 14:25
Temperature	21.5		0.10	0.100	°C	1	11/18/2019 14:25

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB10) @ 20-21.5'
Collection Date: 11/13/2019 12:15 PM

Work Order: 19111193
Lab ID: 19111193-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/18/19		Analyst: BCM
DRO (C10-C28)	7.0		3.6	6.3	mg/Kg-dry	1	11/20/2019 08:35
<i>Surr: 4-Terphenyl-d14</i>	<i>60.1</i>			<i>33-111</i>	<i>%REC</i>	<i>1</i>	11/20/2019 08:35
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/15/19		Analyst: BCM
GRO (C6-C10)	U		3.3	8.0	mg/Kg	1	11/21/2019 03:45
<i>Surr: Toluene-d8</i>	<i>87.9</i>			<i>71-123</i>	<i>%REC</i>	<i>1</i>	11/21/2019 03:45
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/21/19		Analyst: RSH
Mercury	0.022	J	0.0022	0.022	mg/Kg-dry	1	11/21/2019 14:02
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/20/19		Analyst: STP
Arsenic	31		0.063	0.53	mg/Kg-dry	1	11/20/2019 21:23
Barium	500		4.8	5.3	mg/Kg-dry	10	11/22/2019 11:12
Cadmium	0.24		0.032	0.21	mg/Kg-dry	1	11/20/2019 21:23
Chromium	24		0.23	0.53	mg/Kg-dry	1	11/20/2019 21:23
Copper	31		5.3	5.3	mg/Kg-dry	10	11/22/2019 11:12
Lead	19		0.25	0.53	mg/Kg-dry	1	11/20/2019 21:23
Nickel	18		0.27	0.53	mg/Kg-dry	1	11/20/2019 21:23
Selenium	0.52	J	0.48	0.53	mg/Kg-dry	1	11/20/2019 21:23
Silver	0.076	J	0.069	0.53	mg/Kg-dry	1	11/20/2019 21:23
Zinc	54		1.0	1.1	mg/Kg-dry	1	11/20/2019 21:23
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Calcium	24		2.5	5.0	mg/L	10	11/22/2019 11:31
Magnesium	19		0.50	2.0	mg/L	10	11/22/2019 11:31
Sodium	66		0.45	2.0	mg/L	10	11/22/2019 11:31
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Sodium Adsorption Ratio	2.5		0.010	0.010	none	1	11/21/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/21/19		Analyst: EEW
Acenaphthene	U		0.0010	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Anthracene	U		0.0018	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Benzo(a)anthracene	U		0.0022	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Benzo(a)pyrene	U		0.0014	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Benzo(b)fluoranthene	U		0.0013	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Benzo(k)fluoranthene	U		0.0015	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Chrysene	U		0.0011	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Dibenzo(a,h)anthracene	U		0.0012	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Fluoranthene	U		0.00097	0.0052	mg/Kg-dry	1	11/21/2019 14:16

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB10) @ 20-21.5'
Collection Date: 11/13/2019 12:15 PM

Work Order: 19111193
Lab ID: 19111193-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Indeno(1,2,3-cd)pyrene	U		0.0019	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Naphthalene	U		0.0023	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Pyrene	U		0.00087	0.0052	mg/Kg-dry	1	11/21/2019 14:16
Surr: 2-Fluorobiphenyl	89.6			20-140	%REC	1	11/21/2019 14:16
Surr: 4-Terphenyl-d14	66.5			22-172	%REC	1	11/21/2019 14:16
Surr: Nitrobenzene-d5	91.0			28-140	%REC	1	11/21/2019 14:16
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/15/19		Analyst: JNS
Benzene	U		0.0082	0.048	mg/Kg-dry	1	11/21/2019 03:53
Ethylbenzene	0.010	J	0.010	0.048	mg/Kg-dry	1	11/21/2019 03:53
m,p-Xylene	U		0.064	0.095	mg/Kg-dry	1	11/21/2019 03:53
o-Xylene	U		0.018	0.048	mg/Kg-dry	1	11/21/2019 03:53
Toluene	U		0.013	0.048	mg/Kg-dry	1	11/21/2019 03:53
Xylenes, Total	U		0.064	0.14	mg/Kg-dry	1	11/21/2019 03:53
Surr: 1,2-Dichloroethane-d4	79.6			70-130	%REC	1	11/21/2019 03:53
Surr: 4-Bromofluorobenzene	99.1			70-130	%REC	1	11/21/2019 03:53
Surr: Dibromofluoromethane	80.0			70-130	%REC	1	11/21/2019 03:53
Surr: Toluene-d8	94.3			70-130	%REC	1	11/21/2019 03:53
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: DVD
Electrical Conductivity @ Saturation	0.031		0.00055	0.0050	mmhos/cm @25°	20	11/21/2019 12:20
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	24		0.40	1.3	mg/Kg-dry	1	11/21/2019 15:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/19/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/19/2019 15:03
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	22		0.10	0.10	% of sample	1	11/19/2019 09:40
PH			Method: SW9045D		Prep: EXTRACT / 11/18/19		Analyst: DNW
pH	9.08		0.10	0.100	s.u.	1	11/18/2019 14:25
Temperature	21.5		0.10	0.100	°C	1	11/18/2019 14:25

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB10) @ 25-26.5'
Collection Date: 11/13/2019 12:30 PM

Work Order: 19111193
Lab ID: 19111193-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 11/18/19		Analyst: BCM
DRO (C10-C28)	U		3.6	6.3	mg/Kg-dry	1	11/20/2019 09:04
Surr: 4-Terphenyl-d14	71.6			33-111	%REC	1	11/20/2019 09:04
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 11/15/19		Analyst: BCM
GRO (C6-C10)	U		3.5	8.4	mg/Kg	1	11/21/2019 04:14
Surr: Toluene-d8	84.7			71-123	%REC	1	11/21/2019 04:14
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 11/21/19		Analyst: RSB
Mercury	0.019	J	0.0023	0.023	mg/Kg-dry	1	11/21/2019 14:04
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 11/20/19		Analyst: STP
Arsenic	26		0.050	0.42	mg/Kg-dry	1	11/20/2019 21:25
Barium	520		3.8	4.2	mg/Kg-dry	10	11/22/2019 11:19
Cadmium	0.21		0.025	0.17	mg/Kg-dry	1	11/20/2019 21:25
Chromium	27		0.18	0.42	mg/Kg-dry	1	11/20/2019 21:25
Copper	33		4.2	4.2	mg/Kg-dry	10	11/22/2019 11:19
Lead	21		0.20	0.42	mg/Kg-dry	1	11/20/2019 21:25
Nickel	24		2.2	4.2	mg/Kg-dry	10	11/22/2019 11:19
Selenium	0.50		0.38	0.42	mg/Kg-dry	1	11/20/2019 21:25
Silver	0.073	J	0.055	0.42	mg/Kg-dry	1	11/20/2019 21:25
Zinc	58		0.82	0.83	mg/Kg-dry	1	11/20/2019 21:25
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Calcium	32		2.5	5.0	mg/L	10	11/22/2019 11:32
Magnesium	21		0.50	2.0	mg/L	10	11/22/2019 11:32
Sodium	98		0.45	2.0	mg/L	10	11/22/2019 11:32
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: STP
Sodium Adsorption Ratio	3.3		0.010	0.010	none	1	11/21/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 11/21/19		Analyst: EEW
Acenaphthene	U		0.0011	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Anthracene	U		0.0018	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Benzo(a)anthracene	U		0.0022	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Benzo(a)pyrene	U		0.0015	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Benzo(b)fluoranthene	U		0.0013	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Benzo(k)fluoranthene	U		0.0016	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Chrysene	U		0.0011	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Dibenzo(a,h)anthracene	U		0.0013	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Fluoranthene	U		0.0010	0.0054	mg/Kg-dry	1	11/21/2019 14:32

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

ALS Group, USA

Date: 22-Nov-19

Client: Caerus Oil and Gas LLC
Project: L19-595 Assessment
Sample ID: 20191113-L19-595 (SB10) @ 25-26.5'
Collection Date: 11/13/2019 12:30 PM

Work Order: 19111193
Lab ID: 19111193-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0018	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Indeno(1,2,3-cd)pyrene	U		0.0019	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Naphthalene	U		0.0024	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Pyrene	U		0.00090	0.0054	mg/Kg-dry	1	11/21/2019 14:32
Surr: 2-Fluorobiphenyl	82.2			20-140	%REC	1	11/21/2019 14:32
Surr: 4-Terphenyl-d14	63.1			22-172	%REC	1	11/21/2019 14:32
Surr: Nitrobenzene-d5	84.4			28-140	%REC	1	11/21/2019 14:32
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 11/15/19		Analyst: JNS
Benzene	U		0.0086	0.050	mg/Kg-dry	1	11/21/2019 04:10
Ethylbenzene	U		0.011	0.050	mg/Kg-dry	1	11/21/2019 04:10
m,p-Xylene	U		0.067	0.10	mg/Kg-dry	1	11/21/2019 04:10
o-Xylene	U		0.019	0.050	mg/Kg-dry	1	11/21/2019 04:10
Toluene	U		0.014	0.050	mg/Kg-dry	1	11/21/2019 04:10
Xylenes, Total	U		0.067	0.15	mg/Kg-dry	1	11/21/2019 04:10
Surr: 1,2-Dichloroethane-d4	78.6			70-130	%REC	1	11/21/2019 04:10
Surr: 4-Bromofluorobenzene	98.9			70-130	%REC	1	11/21/2019 04:10
Surr: Dibromofluoromethane	80.8			70-130	%REC	1	11/21/2019 04:10
Surr: Toluene-d8	94.0			70-130	%REC	1	11/21/2019 04:10
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/21/19		Analyst: DVD
Electrical Conductivity @ Saturation	0.049		0.00055	0.0050	mmhos/cm @25°	20	11/21/2019 12:20
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	27		0.40	1.3	mg/Kg-dry	1	11/21/2019 15:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 11/19/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	11/19/2019 15:03
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	24		0.10	0.10	% of sample	1	11/19/2019 09:40
PH			Method: SW9045D		Prep: EXTRACT / 11/18/19		Analyst: DNW
pH	8.94		0.10	0.100	s.u.	1	11/18/2019 14:25
Temperature	21.5		0.10	0.100	°C	1	11/18/2019 14:25

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

Client: Caerus Oil and Gas LLC
Work Order: 19111193
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145756** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-145756-145756				Units: mg/Kg		Analysis Date: 11/20/2019 05:11 A		
Client ID:		Run ID: GC8_191119A				SeqNo: 6070447		Prep Date: 11/18/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28) U 5.0
Surr: 4-Terphenyl-d14 2.831 0 3.33 0 85 33-111 0

LCS		Sample ID: DLCSS1-145756-145756				Units: mg/Kg		Analysis Date: 11/20/2019 05:40 A		
Client ID:		Run ID: GC8_191119A				SeqNo: 6070532		Prep Date: 11/18/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28) 370 5.0 333 0 111 58-111 0 S
Surr: 4-Terphenyl-d14 2.352 0 3.33 0 70.6 33-111 0

MS		Sample ID: 19111271-01A MS				Units: mg/Kg		Analysis Date: 11/20/2019 06:09 A		
Client ID:		Run ID: GC8_191119A				SeqNo: 6070450		Prep Date: 11/18/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28) 1464 5.0 332.4 1141 97.4 58-111 0
Surr: 4-Terphenyl-d14 9.47 0 3.324 0 285 33-111 0 S

MSD		Sample ID: 19111271-01A MSD				Units: mg/Kg		Analysis Date: 11/20/2019 06:38 A		
Client ID:		Run ID: GC8_191119A				SeqNo: 6070452		Prep Date: 11/18/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28) 1149 5.0 330.8 1141 2.53 58-111 1464 24.1 30 S
Surr: 4-Terphenyl-d14 9.647 0 3.308 0 292 33-111 9.47 1.86 30 S

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145694** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-145694-145694				Units: µg/Kg-dry		Analysis Date: 11/17/2019 06:29 A		
Client ID:		Run ID: GC9_191114C				SeqNo: 6071172		Prep Date: 11/15/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	4242	0	5000	0	84.8	71-123	0			

LCS		Sample ID: LCS-145694-145694				Units: µg/Kg-dry		Analysis Date: 11/17/2019 05:01 A		
Client ID:		Run ID: GC9_191114C				SeqNo: 6071171		Prep Date: 11/15/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	597000	5,000	500000	0	119	71-123	0			
Surr: Toluene-d8	5417	0	5000	0	108	71-123	0			

MS		Sample ID: 19111082-03A MS				Units: µg/Kg-dry		Analysis Date: 11/17/2019 08:26 A		
Client ID:		Run ID: GC9_191114C				SeqNo: 6071174		Prep Date: 11/15/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	808400	7,700	774700	13860	103	71-123	0			
Surr: Toluene-d8	9209	0	7747	0	119	71-123	0			

MSD		Sample ID: 19111082-03A MSD				Units: µg/Kg-dry		Analysis Date: 11/17/2019 08:55 A		
Client ID:		Run ID: GC9_191114C				SeqNo: 6071175		Prep Date: 11/15/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	886400	7,400	735400	13860	119	71-123	808400	9.21	30	
Surr: Toluene-d8	7799	0	7354	0	106	71-123	9209	16.6	30	

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145960** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-145960-145960				Units: mg/Kg		Analysis Date: 11/21/2019 01:10 P		
Client ID:		Run ID: HG4_191121A				SeqNo: 6074821		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-145960-145960				Units: mg/Kg		Analysis Date: 11/21/2019 01:12 P		
Client ID:		Run ID: HG4_191121A				SeqNo: 6074822		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.18 0.020 0.1665 0 108 80-120 0

MS		Sample ID: 19111248-01BMS				Units: mg/Kg		Analysis Date: 11/21/2019 02:09 P		
Client ID:		Run ID: HG4_191121A				SeqNo: 6074848		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1561 0.017 0.1439 0.004915 105 75-125 0

MSD		Sample ID: 19111248-01BMSD				Units: mg/Kg		Analysis Date: 11/21/2019 02:11 P		
Client ID:		Run ID: HG4_191121A				SeqNo: 6074849		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1464 0.016 0.1346 0.004915 105 75-125 0.1561 6.36 35

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145904** Instrument ID **ICPMS4** Method: **SW6020A**

MBLK		Sample ID: MBLK-145904-145904					Units: mg/Kg		Analysis Date: 11/20/2019 03:41 P		
Client ID:			Run ID: ICPMS4_191120A			SeqNo: 6072444		Prep Date: 11/20/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Lead U 0.25

LCS		Sample ID: LCS-145904-145904					Units: mg/Kg		Analysis Date: 11/20/2019 03:42 P	
Client ID:			Run ID: ICPMS4_191120A			SeqNo: 6072445		Prep Date: 11/20/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Lead 5.263 0.25 5 0 105 80-120 0

MS		Sample ID: 19111511-01AMS					Units: mg/Kg		Analysis Date: 11/20/2019 03:47 P		
Client ID:			Run ID: ICPMS4_191120A			SeqNo: 6072448		Prep Date: 11/20/2019		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Lead 166.8 3.6 7.289 126.5 554 75-125 0 SO

MSD		Sample ID: 19111511-01AMSD					Units: mg/Kg		Analysis Date: 11/20/2019 03:49 P		
Client ID:			Run ID: ICPMS4_191120A			SeqNo: 6072449		Prep Date: 11/20/2019		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Lead 224.8 3.7 7.396 126.5 1330 75-125 166.8 29.6 20 SRO

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145984** Instrument ID **ICPMS4** Method: **SW6020A**

DUP	Sample ID: 19111285-02ADUP					Units: mg/L		Analysis Date: 11/21/2019 04:55 P		
Client ID:	Run ID: ICPMS4_191121A				SeqNo: 6075867		Prep Date: 11/21/2019		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	490.2	5.0	0	0	0	0-0	577.9	16.4		
Magnesium	330.1	2.0	0	0	0	0-0	417.2	23.3		
Sodium	356.6	2.0	0	0	0	0-0	452.5	23.7		

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

Batch ID: **145984** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP	Sample ID: 19111285-02ADUP					Units: none		Analysis Date: 11/21/2019		
Client ID:	Run ID: SAR_191121A				SeqNo: 6075876		Prep Date: 11/21/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	3.053	0.010	0	0	0		3.502	13.7	50	

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 1911193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145917** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-145917-145917				Units: µg/Kg		Analysis Date: 11/21/2019 11:26 A		
Client ID:		Run ID: SVMS6_191121A				SeqNo: 6077113		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	4.2								
Anthracene	U	4.2								
Benzo(a)anthracene	U	4.2								
Benzo(a)pyrene	U	4.2								
Benzo(b)fluoranthene	U	4.2								
Benzo(k)fluoranthene	U	4.2								
Chrysene	U	4.2								
Dibenzo(a,h)anthracene	U	4.2								
Fluoranthene	U	4.2								
Fluorene	U	4.2								
Indeno(1,2,3-cd)pyrene	U	4.2								
Naphthalene	U	4.2								
Pyrene	U	4.2								
Surr: 2-Fluorobiphenyl	3084	0	3333	0	92.5	20-140	0			
Surr: 4-Terphenyl-d14	2404	0	3333	0	72.1	22-172	0			
Surr: Nitrobenzene-d5	3126	0	3333	0	93.8	28-140	0			

LCS		Sample ID: SLCSS1-145917-145917				Units: µg/Kg		Analysis Date: 11/21/2019 12:43 P		
Client ID:		Run ID: SVMS6_191121A				SeqNo: 6077114		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1148	4.2	1333	0	86.1	40-140	0			
Anthracene	1277	4.2	1333	0	95.8	40-140	0			
Benzo(a)anthracene	1238	4.2	1333	0	92.8	40-140	0			
Benzo(a)pyrene	1195	4.2	1333	0	89.6	40-140	0			
Benzo(b)fluoranthene	1197	4.2	1333	0	89.8	40-140	0			
Benzo(k)fluoranthene	1201	4.2	1333	0	90.1	40-140	0			
Chrysene	1147	4.2	1333	0	86	40-140	0			
Dibenzo(a,h)anthracene	1249	4.2	1333	0	93.7	40-140	0			
Fluoranthene	1285	4.2	1333	0	96.4	40-140	0			
Fluorene	1260	4.2	1333	0	94.5	40-140	0			
Indeno(1,2,3-cd)pyrene	1286	4.2	1333	0	96.5	40-140	0			
Naphthalene	1211	4.2	1333	0	90.8	40-140	0			
Pyrene	1203	4.2	1333	0	90.3	40-140	0			
Surr: 2-Fluorobiphenyl	3031	0	3333	0	90.9	20-140	0			
Surr: 4-Terphenyl-d14	2298	0	3333	0	68.9	22-172	0			
Surr: Nitrobenzene-d5	3035	0	3333	0	91.1	28-140	0			

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

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: 145917 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 19111289-01B MS				Units: µg/Kg		Analysis Date: 11/21/2019 12:59 P	
Client ID:			Run ID: SVMS6_191121A			SeqNo: 6077115		Prep Date: 11/21/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1109	4.0	1289	0	86.1	40-140	0				
Anthracene	1246	4.0	1289	0	96.7	40-140	0				
Benzo(a)anthracene	1201	4.0	1289	0	93.2	40-140	0				
Benzo(a)pyrene	1166	4.0	1289	0	90.5	40-140	0				
Benzo(b)fluoranthene	1157	4.0	1289	0	89.8	40-140	0				
Benzo(k)fluoranthene	1166	4.0	1289	0	90.5	40-140	0				
Chrysene	1094	4.0	1289	0	84.9	40-140	0				
Dibenzo(a,h)anthracene	1280	4.0	1289	0	99.3	40-140	0				
Fluoranthene	1231	4.0	1289	0	95.6	40-140	0				
Fluorene	1213	4.0	1289	0	94.1	40-140	0				
Indeno(1,2,3-cd)pyrene	1342	4.0	1289	0	104	40-140	0				
Naphthalene	1199	4.0	1289	0	93	40-140	0				
Pyrene	1123	4.0	1289	0	87.1	40-140	0				
Surr: 2-Fluorobiphenyl	2922	0	3222	0	90.7	20-140	0				
Surr: 4-Terphenyl-d14	2178	0	3222	0	67.6	22-172	0				
Surr: Nitrobenzene-d5	3026	0	3222	0	93.9	28-140	0				

MSD				Sample ID: 19111289-01B MSD				Units: µg/Kg		Analysis Date: 11/21/2019 01:14 P	
Client ID:			Run ID: SVMS6_191121A			SeqNo: 6077116		Prep Date: 11/21/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1131	4.2	1327	0	85.2	40-140	1109	1.95	30		
Anthracene	1272	4.2	1327	0	95.9	40-140	1246	2.12	30		
Benzo(a)anthracene	1218	4.2	1327	0	91.8	40-140	1201	1.35	30		
Benzo(a)pyrene	1199	4.2	1327	0	90.4	40-140	1166	2.83	30		
Benzo(b)fluoranthene	1152	4.2	1327	0	86.8	40-140	1157	0.446	30		
Benzo(k)fluoranthene	1160	4.2	1327	0	87.4	40-140	1166	0.461	30		
Chrysene	1116	4.2	1327	0	84.1	40-140	1094	2.06	30		
Dibenzo(a,h)anthracene	1302	4.2	1327	0	98.1	40-140	1280	1.71	30		
Fluoranthene	1262	4.2	1327	0	95.1	40-140	1231	2.49	30		
Fluorene	1238	4.2	1327	0	93.3	40-140	1213	2.02	30		
Indeno(1,2,3-cd)pyrene	1420	4.2	1327	0	107	40-140	1342	5.63	30		
Naphthalene	1224	4.2	1327	0	92.2	40-140	1199	2.07	30		
Pyrene	1233	4.2	1327	0	92.9	40-140	1123	9.39	30		
Surr: 2-Fluorobiphenyl	3005	0	3318	0	90.6	20-140	2922	2.82	0		
Surr: 4-Terphenyl-d14	2375	0	3318	0	71.6	22-172	2178	8.63	0		
Surr: Nitrobenzene-d5	3010	0	3318	0	90.7	28-140	3026	0.511	0		

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 1911193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145714** Instrument ID **VMS11** Method: **SW8260C**

MBLK				Sample ID: MBLK-145714-145714			Units: µg/Kg-dry		Analysis Date: 11/21/2019 03:09 P		
Client ID:			Run ID: VMS11_191121A			SeqNo: 6076335		Prep Date: 11/15/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	U	30									
Ethylbenzene	U	30									
m,p-Xylene	U	60									
o-Xylene	U	30									
Toluene	U	30									
Xylenes, Total	U	90									
Surr: 1,2-Dichloroethane-d4	980	0	1000	0	98	70-130		0			
Surr: 4-Bromofluorobenzene	984.5	0	1000	0	98.4	70-130		0			
Surr: Dibromofluoromethane	889.5	0	1000	0	89	70-130		0			
Surr: Toluene-d8	962	0	1000	0	96.2	70-130		0			

LCS				Sample ID: LCS-145714-145714				Units: µg/Kg-dry		Analysis Date: 11/21/2019 02:02 P	
Client ID:			Run ID: VMS11_191121A			SeqNo: 6076334		Prep Date: 11/15/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1030	30	1000	0	103	75-125	0				
Ethylbenzene	982	30	1000	0	98.2	75-125	0				
m,p-Xylene	1974	60	2000	0	98.7	80-125	0				
o-Xylene	991	30	1000	0	99.1	75-125	0				
Toluene	983.5	30	1000	0	98.4	70-125	0				
Xylenes, Total	2964	90	3000	0	98.8	75-125	0				
Surr: 1,2-Dichloroethane-d4	960	0	1000	0	96	70-130	0				
Surr: 4-Bromofluorobenzene	994.5	0	1000	0	99.4	70-130	0				
Surr: Dibromofluoromethane	1007	0	1000	0	101	70-130	0				
Surr: Toluene-d8	976.5	0	1000	0	97.6	70-130	0				

MS				Sample ID: 19111193-01A MS			Units: µg/Kg-dry		Analysis Date: 11/21/2019 10:34 P		
Client ID: 20191113-L19-595 (SB09) @ 35-36.5'				Run ID: VMS11_191121A			SeqNo: 6076350		Prep Date: 11/15/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1556	47	1552	0	100	75-125	0				
Ethylbenzene	1570	47	1552	0	101	75-125	0				
m,p-Xylene	3163	93	3105	0	102	80-125	0				
o-Xylene	1577	47	1552	0	102	75-125	0				
Toluene	1535	47	1552	7.184	98.4	70-125	0				
Xylenes, Total	4741	140	4657	0	102	75-125	0				
Surr: 1,2-Dichloroethane-d4	1468	0	1552	0	94.6	70-130	0				
Surr: 4-Bromofluorobenzene	1617	0	1552	0	104	70-130	0				
Surr: Dibromofluoromethane	1473	0	1552	0	94.8	70-130	0				
Surr: Toluene-d8	1510	0	1552	0	97.2	70-130	0				

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

Client: Caerus Oil and Gas LLC
Work Order: 19111193
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145714** Instrument ID **VMS11** Method: **SW8260C**

MSD				Sample ID: 19111193-01A MSD			Units: µg/Kg-dry		Analysis Date: 11/21/2019 10:56 P	
Client ID: 20191113-L19-595 (SB09) @ 35-36.5'				Run ID: VMS11_191121A			SeqNo: 6076351		Prep Date: 11/15/2019	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1407	42	1395	0	101	75-125	1556	10	30	
Ethylbenzene	1388	42	1395	0	99.4	75-125	1570	12.4	30	
m,p-Xylene	2795	84	2791	0	100	80-125	3163	12.4	30	
o-Xylene	1390	42	1395	0	99.6	75-125	1577	12.6	30	
Toluene	1351	42	1395	7.184	96.3	70-125	1535	12.8	30	
Xylenes, Total	4185	130	4186	0	100	75-125	4741	12.5	30	
Surr: 1,2-Dichloroethane-d4	1353	0	1395	0	97	70-130	1468	8.11	30	
Surr: 4-Bromofluorobenzene	1423	0	1395	0	102	70-130	1617	12.7	30	
Surr: Dibromofluoromethane	1354	0	1395	0	97	70-130	1473	8.37	30	
Surr: Toluene-d8	1339	0	1395	0	96	70-130	1510	12	30	

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19111193
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145779** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-145779-145779				Units: s.u.			Analysis Date: 11/18/2019 02:25 P		
Client ID:			Run ID: WETCHEM_191118L				SeqNo: 6063935			Prep Date: 11/18/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
pH		3.97	0.10	4	0	99.2	90-110	0					

DUP				Sample ID: 19111290-01C DUP				Units: s.u.			Analysis Date: 11/18/2019 02:25 P			
Client ID:				Run ID: WETCHEM_191118L				SeqNo: 6063947			Prep Date: 11/18/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		7.72	0.10	0	0	0	0-0	7.81	1.16	20				
Temperature		21.5	0.10	0	0	0		21.5	0					

DUP				Sample ID: 19111318-03C DUP				Units: s.u.			Analysis Date: 11/18/2019 02:25 P			
Client ID:				Run ID: WETCHEM_191118L				SeqNo: 6063951			Prep Date: 11/18/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
pH	7.8	0.10	0	0	0	0-0	7.68	1.55	20					
Temperature	21.6	0.10	0	0	0		21.5	0.464						

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145854** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-145854-145854				Units: mg/Kg		Analysis Date: 11/19/2019 03:03 P		
Client ID:		Run ID: WETCHEM_191119T		SeqNo: 6068107		Prep Date: 11/19/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-145854-145854				Units: mg/Kg		Analysis Date: 11/19/2019 03:03 P		
Client ID:		Run ID: WETCHEM_191119T		SeqNo: 6068108		Prep Date: 11/19/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.8 1.0 5 0 96 80-120 0

MS		Sample ID: 19111162-01A MS				Units: mg/Kg		Analysis Date: 11/19/2019 03:03 P		
Client ID:		Run ID: WETCHEM_191119T		SeqNo: 6068110		Prep Date: 11/19/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 0.98 4.902 0.2941 -6 75-125 0 S

MS		Sample ID: 19111162-01A MSI				Units: mg/Kg		Analysis Date: 11/19/2019 03:03 P		
Client ID:		Run ID: WETCHEM_191119T		SeqNo: 6068112		Prep Date: 11/19/2019		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1583 99 1896 0.2941 83.5 75-125 0

MSD		Sample ID: 19111162-01A MSD				Units: mg/Kg		Analysis Date: 11/19/2019 03:03 P		
Client ID:		Run ID: WETCHEM_191119T		SeqNo: 6068111		Prep Date: 11/19/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 0.98 4.902 0.2941 -6 75-125 0.2941 0 20 S

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
Work Order: 19111193
Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **145984** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

MBLK		Sample ID: MB-R275898-145984				Units: mmhos/cm @25°		Analysis Date: 11/21/2019 12:20 P		
Client ID:		Run ID: WETCHEM_191121K				SeqNo: 6074538		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.0006	0.0050								J

DUP		Sample ID: 19111285-02A DUP				Units: mmhos/cm @25°		Analysis Date: 11/21/2019 12:20 P		
Client ID:		Run ID: WETCHEM_191121K				SeqNo: 6074549		Prep Date: 11/21/2019		DF: 20
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.386	0.0050	0	0	0		0.452	15.8	50	

LCS1		Sample ID: LCS 1-145984				Units: mmhos/cm @25°		Analysis Date: 11/21/2019 12:20 P		
Client ID:		Run ID: WETCHEM_191121K				SeqNo: 6074539		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.01496	0.0050	0.0149	0	100	92-111	0			

LCS2		Sample ID: LCS 2-145984				Units: mmhos/cm @25°		Analysis Date: 11/21/2019 12:20 P		
Client ID:		Run ID: WETCHEM_191121K				SeqNo: 6074556		Prep Date: 11/21/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.602	0.0050	0.592	0	102	88-114	0			

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Client: Caerus Oil and Gas LLC
 Work Order: 19111193
 Project: L19-595 Assessment

QC BATCH REPORT

Batch ID: **R275773** Instrument ID **MOIST** Method: **SW3550C**

MBLK				Sample ID: WBLKS-R275773				Units: % of sample			Analysis Date: 11/19/2019 09:40 A			
Client ID:				Run ID: MOIST_191119A				SeqNo: 6070788			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R275773					Units: % of sample		Analysis Date: 11/19/2019 09:40 A		
Client ID:			Run ID: MOIST_191119A			SeqNo: 6070787		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.10 100 0 100 98-102 0

DUP				Sample ID: 19110931-04A DUP				Units: % of sample			Analysis Date: 11/19/2019 09:40 A			
Client ID:				Run ID: MOIST_191119A				SeqNo: 6070769			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 18.42 0.10 0 0 0 0-0 18.5 0.433 10

DUP				Sample ID: 19111206-09B DUP				Units: % of sample			Analysis Date: 11/19/2019 09:40 A			
Client ID:				Run ID: MOIST_191119A				SeqNo: 6070781			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 16.38 0.10 0 0 0 0-0 15.77 3.79 10

The following samples were analyzed in this batch:

19111193-01A	19111193-02A	19111193-03A
19111193-04A		

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

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **15-Nov-19 10:00**

Work Order: **19111193**

Received by: **DS**

Checklist completed by Diane Shaw
eSignature

15-Nov-19
Date

Reviewed by: Chad Whelton
eSignature

22-Nov-19
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>3.2/3.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>11/15/2019 1:11:10 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: