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National Center for Testing & Innovation

ANALYTICAL REPORT

September 10, 2019

Caerus Oil and Gas

Sample Delivery Group:	L1134706
Samples Received:	08/27/2019
Project Number:	L19
Description:	L19
Site:	L19
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

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20190826-L19 NWALL 10' L1134706-01 Solid

Collected by: Matt Kasten
Collected date/time: 08/26/19 11:30
Received date/time: 08/27/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1338152	1	09/03/19 10:03	09/03/19 10:03	CCE	Mt. Juliet, TN
Calculated Results	WG1340033	1	09/04/19 17:48	09/06/19 16:41	MSP	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1340486	1	09/05/19 12:06	09/06/19 16:41	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1338033	1	08/30/19 20:16	08/30/19 21:33	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1339326	1	09/04/19 16:04	09/04/19 17:58	AKA	Mt. Juliet, TN
Mercury by Method 7471A	WG1340149	1	09/04/19 21:49	09/05/19 10:45	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1340033	1	09/04/19 17:48	09/05/19 17:39	EL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1340624	1	09/05/19 17:14	09/06/19 05:52	AAT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.77		1	09/03/2019 10:03	WG1338152

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	25.2		1.00	1	09/06/2019 16:41	WG1340033

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/06/2019 16:41	WG1340486

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.57		1	08/30/2019 21:33	WG1338033

Sample Narrative:

L1134706-01 WG1338033: 8.57 at 23.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	629		10.0	1	09/04/2019 17:58	WG1339326

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0300	1	09/05/2019 10:45	WG1340149

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	17.8		2.00	1	09/05/2019 17:39	WG1340033
Barium	359		0.500	1	09/05/2019 17:39	WG1340033
Cadmium	0.529		0.500	1	09/05/2019 17:39	WG1340033
Chromium	25.2		1.00	1	09/05/2019 17:39	WG1340033
Copper	30.3		2.00	1	09/05/2019 17:39	WG1340033
Lead	18.4		0.500	1	09/05/2019 17:39	WG1340033
Nickel	21.5		2.00	1	09/05/2019 17:39	WG1340033
Selenium	ND		2.00	1	09/05/2019 17:39	WG1340033
Silver	ND		1.00	1	09/05/2019 17:39	WG1340033
Zinc	65.1		5.00	1	09/05/2019 17:39	WG1340033

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Acenaphthene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Acenaphthylene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Benzo(a)anthracene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Benzo(a)pyrene	ND		0.00600	1	09/06/2019 05:52	WG1340624

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(b)fluoranthene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Benzo(g,h,i)perylene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Benzo(k)fluoranthene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Chrysene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Dibenz(a,h)anthracene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Fluoranthene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Fluorene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Naphthalene	ND		0.0200	1	09/06/2019 05:52	WG1340624
Phenanthrene	ND		0.00600	1	09/06/2019 05:52	WG1340624
Pyrene	ND		0.00600	1	09/06/2019 05:52	WG1340624
1-Methylnaphthalene	ND		0.0200	1	09/06/2019 05:52	WG1340624
2-Methylnaphthalene	ND		0.0200	1	09/06/2019 05:52	WG1340624
2-Chloronaphthalene	ND		0.0200	1	09/06/2019 05:52	WG1340624
(S) p-Terphenyl-d14	*68.1*		*23.0-120*		*09/06/2019 05:52*	WG1340624
(S) Nitrobenzene-d5	*82.0*		*14.0-149*		*09/06/2019 05:52*	WG1340624
(S) 2-Fluorobiphenyl	*68.3*		*34.0-125*		*09/06/2019 05:52*	WG1340624

Method Blank (MB)

(MB) R3448026-1 09/06/19 16:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chromium,Hexavalent	U		0.640	2.00

L1134740-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1134740-01 09/06/19 16:42 • (DUP) R3448026-3 09/06/19 16:42

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chromium,Hexavalent	U	0.000	1	0.000		20

L1135858-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1135858-08 09/06/19 16:57 • (DUP) R3448026-8 09/06/19 16:57

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chromium,Hexavalent	U	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3448026-2 09/06/19 16:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	24.0	24.7	103	80.0-120	

L1135858-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1135858-05 09/06/19 16:52 • (MS) R3448026-4 09/06/19 16:52 • (MSD) R3448026-5 09/06/19 16:53

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium,Hexavalent	23.3	2.64	15.9	16.5	56.9	59.4	1	75.0-125	J6	J6	3.58	20

L1135858-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1135858-05 09/06/19 16:52 • (MS) R3448026-6 09/06/19 16:53

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chromium,Hexavalent	791	2.64	738	93.4	50	75.0-125	

L1134682-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1134682-01 08/30/19 21:33 • (DUP) R3446175-2 08/30/19 21:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.78	8.78	1	0.000		1

Sample Narrative:

OS: 8.78 at 23.9C

DUP: 8.78 at 24.2C

Laboratory Control Sample (LCS)

(LCS) R3446175-1 08/30/19 21:33

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.96	99.6	99.0-101	

Sample Narrative:

LCS: 9.96 at 21.7C

Method Blank (MB)

(MB) R3447272-1 09/04/19 17:58

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	U		10.0	10.0

L1134971-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1134971-01 09/04/19 17:58 • (DUP) R3447272-3 09/04/19 17:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	74.4	72.4	1	2.72		20

L1134982-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1134982-03 09/04/19 17:58 • (DUP) R3447272-4 09/04/19 17:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	2430	2430	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3447272-2 09/04/19 17:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	393	390	99.2	85.0-115	

Method Blank (MB)

(MB) R3447453-1 09/05/19 10:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.00280	0.0300

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3447453-2 09/05/19 10:12 • (LCSD) R3447453-3 09/05/19 10:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	0.514	0.489	103	97.8	80.0-120			5.07	20

L1135561-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1135561-02 09/05/19 10:17 • (MS) R3447453-4 09/05/19 10:19 • (MSD) R3447453-5 09/05/19 10:42

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.623	0.0151	0.624	0.656	97.7	103	1	75.0-125			4.96	20

Method Blank (MB)

(MB) R3447746-1 09/05/19 17:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.170	0.500
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Copper	U		0.530	2.00
Lead	U		0.190	0.500
Nickel	U		0.490	2.00
Selenium	U		0.620	2.00
Silver	U		0.120	1.00
Zinc	0.730	J	0.590	5.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3447746-2 09/05/19 17:18 • (LCSD) R3447746-3 09/05/19 17:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	99.1	97.3	99.1	97.3	80.0-120			1.76	20
Barium	100	106	105	106	105	80.0-120			0.767	20
Cadmium	100	98.1	97.3	98.1	97.3	80.0-120			0.839	20
Chromium	100	99.8	98.9	99.8	98.9	80.0-120			0.864	20
Copper	100	101	100	101	100	80.0-120			0.574	20
Lead	100	101	100	101	100	80.0-120			1.11	20
Nickel	100	101	101	101	101	80.0-120			0.545	20
Selenium	100	98.2	96.9	98.2	96.9	80.0-120			1.30	20
Silver	20.0	18.4	18.1	91.8	90.4	80.0-120			1.59	20
Zinc	100	100	99.6	100	99.6	80.0-120			0.556	20

L1135391-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1135391-01 09/05/19 17:23 • (MS) R3447746-6 09/05/19 17:31 • (MSD) R3447746-7 09/05/19 17:33

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	125	18.5	135	136	93.2	94.0	1	75.0-125			0.727	20
Barium	125	242	353	408	88.6	133	1	75.0-125		J5	14.7	20
Cadmium	125	0.988	120	122	95.7	97.1	1	75.0-125			1.52	20
Chromium	125	4420	3920	5220	0.000	636	1	75.0-125	V	J3 V	28.5	20
Copper	125	45.4	165	162	96.2	93.6	1	75.0-125			1.94	20
Lead	125	95.4	214	295	95.0	160	1	75.0-125		J3 J5	32.0	20

L1135391-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1135391-01 09/05/19 17:23 • (MS) R3447746-6 09/05/19 17:31 • (MSD) R3447746-7 09/05/19 17:33

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nickel	125	33.6	156	160	97.9	101	1	75.0-125			2.78	20
Selenium	125	1.53	117	118	92.7	93.1	1	75.0-125			0.439	20
Silver	24.9	0.915	23.5	24.8	90.5	95.8	1	75.0-125			5.55	20
Zinc	125	107	276	207	136	80.5	1	75.0-125	J5	J3	28.5	20

Method Blank (MB)

(MB) R3448185-2 09/05/19 22:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	0.00124	J	0.000600	0.00600
Benzo(a)pyrene	0.000647	J	0.000600	0.00600
Benzo(b)fluoranthene	0.000911	J	0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	0.000625	J	0.000600	0.00600
Chrysene	0.00117	J	0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	0.00114	J	0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	0.000842	J	0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	*80.8*			*14.0-149*
(S) 2-Fluorobiphenyl	*74.3*			*34.0-125*
(S) p-Terphenyl-d14	*84.8*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3448185-1 09/05/19 21:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0926	116	50.0-126	
Acenaphthene	0.0800	0.0858	107	50.0-120	
Acenaphthylene	0.0800	0.0913	114	50.0-120	
Benzo(a)anthracene	0.0800	0.0825	103	45.0-120	
Benzo(a)pyrene	0.0800	0.0709	88.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0747	93.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0816	102	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0892	112	49.0-125	
Chrysene	0.0800	0.0816	102	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0857	107	47.0-125	
Fluoranthene	0.0800	0.0917	115	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3448185-1 09/05/19 21:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0875	109	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0846	106	46.0-125	
Naphthalene	0.0800	0.0853	107	50.0-120	
Phenanthrene	0.0800	0.0857	107	47.0-120	
Pyrene	0.0800	0.0746	93.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0868	109	51.0-121	
2-Methylnaphthalene	0.0800	0.0810	101	50.0-120	
2-Chloronaphthalene	0.0800	0.0776	97.0	50.0-120	
(S) Nitrobenzene-d5			*116*	*14.0-149*	
(S) 2-Fluorobiphenyl			*103*	*34.0-125*	
(S) p-Terphenyl-d14			*102*	*23.0-120*	

L1134774-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1134774-01 09/05/19 22:37 • (MS) R3448185-3 09/05/19 22:58 • (MSD) R3448185-4 09/05/19 23:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	ND	0.0655	0.0716	81.9	89.5	1	10.0-145			8.90	30
Acenaphthene	0.0800	ND	0.0578	0.0659	72.3	82.4	1	14.0-127			13.1	27
Acenaphthylene	0.0800	ND	0.0624	0.0707	78.0	88.4	1	21.0-124			12.5	25
Benzo(a)anthracene	0.0800	ND	0.0557	0.0628	69.6	78.5	1	10.0-139			12.0	30
Benzo(a)pyrene	0.0800	ND	0.0579	0.0646	72.4	80.7	1	10.0-141			10.9	31
Benzo(b)fluoranthene	0.0800	ND	0.0524	0.0582	65.5	72.8	1	10.0-140			10.5	36
Benzo(g,h,i)perylene	0.0800	ND	0.0581	0.0637	72.6	79.6	1	10.0-140			9.20	33
Benzo(k)fluoranthene	0.0800	ND	0.0580	0.0668	72.5	83.5	1	10.0-137			14.1	31
Chrysene	0.0800	ND	0.0554	0.0616	69.3	77.0	1	10.0-145			10.6	30
Dibenz(a,h)anthracene	0.0800	ND	0.0587	0.0653	73.4	81.6	1	10.0-132			10.6	31
Fluoranthene	0.0800	ND	0.0623	0.0700	77.9	87.5	1	10.0-153			11.6	33
Fluorene	0.0800	ND	0.0595	0.0671	74.4	83.9	1	11.0-130			12.0	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0590	0.0648	73.8	81.0	1	10.0-137			9.37	32
Naphthalene	0.0800	ND	0.0558	0.0636	69.8	79.5	1	10.0-135			13.1	27
Phenanthrene	0.0800	ND	0.0582	0.0653	72.8	81.6	1	10.0-144			11.5	31
Pyrene	0.0800	ND	0.0507	0.0570	63.4	71.3	1	10.0-148			11.7	35
1-Methylnaphthalene	0.0800	ND	0.0575	0.0648	71.9	81.0	1	10.0-142			11.9	28
2-Methylnaphthalene	0.0800	ND	0.0541	0.0617	67.6	77.1	1	10.0-137			13.1	28
2-Chloronaphthalene	0.0800	ND	0.0524	0.0593	65.5	74.1	1	29.0-120			12.4	24
(S) Nitrobenzene-d5					*85.9*	*92.4*		*14.0-149*				
(S) 2-Fluorobiphenyl					*72.4*	*80.3*		*34.0-125*				
(S) p-Terphenyl-d14					*71.5*	*78.8*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

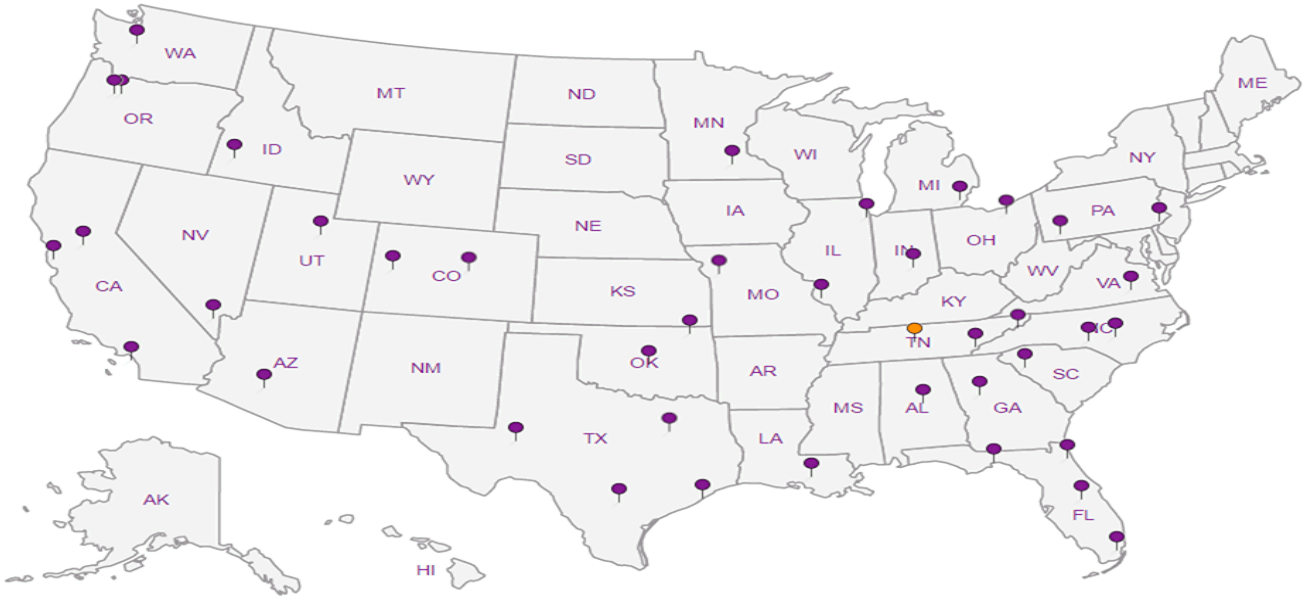
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Company Name/Address:	Billing Information:
Caerus 143 Diamond Avenue Parachute, CO 81635	Brett Middleton 143 Diamond Avenue Parachute, CO 81635
Report to: **Brett Middleton**	Email To: **bmiddleton@caerusoilandgas.com**

Project Description: L19 — City/State Collected: Parachute, Co

Phone: **970-987-4650** Fax: — Client Project #: L19 — Lab Project #:

Collected by (print): Matt Kasten — Site/Facility ID #: L19 — P.O. #:

Collected by (signature): [signature] — Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified): ___ Same Day 200% ___ Next Day 100% X Two Day 50% ___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes FAX? ✓No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEXGRO/DRO - 8021/8015	SV8270PAHSIM - 8270SIM	SPCON - 9050AMod	SAR - Calc.	RCRA8 Metals + Cu, Ni, and Zn - 6010/7470	CR6SS - 3060A/7196	CR3 - Calc.	pH			Rem./Contaminant	Sample # (lab only)
20190826 - L19 NWall 10'	Grab	SS	10'	8/26/19	1130	2	X											-01

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
[signature]	8/26/19	1800	[signature]
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
[signature]	8/24/19	1700	[signature]
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			[signature]

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.0+5=0.5 °C Bottles Received: 2

Date: 08/27 Time: 8:00

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1134706

A103 L1134706 AV 8/30/19

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Andy Vann

From: Chris Ward
Sent: Friday, August 30, 2019 11:25 AM
To: Project Service
Cc: Sample Storage
Subject: L1133071 *CAERUSPCO* Relog

Please relog to a new SDG for the rest of the 910 list (TABLE910). Standard TAT
SV8270PAHSIM
SPCON, PH
SAR
MRCRA8+CUICP,NIICP,ZNICP
CR3+CR6

Thanks,

Chris Ward
Project Manager
Pace Analytical National Center for Testing & Innovation
12065 Lebanon Road | Mt. Juliet, TN 37122
cward@pacenational.com | www.pacenational.com
615.773.9712

ESC Lab Sciences is now Pace Analytical National Center for Testing & Innovation! Please make note of my new email address and website