

April 20, 2020

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Foundation Energy Management LLC

Sample Delivery Group: L1208050
Samples Received: 04/11/2020
Project Number: FOUNDATION ENERGY:FE
Description: Foundation Energy- Fed 31-16
Site: FEDERAL 31-16
Report To: Alyssa Beard
1775 Sherman Street
Suite 1800
Denver, CO 80203

Entire Report Reviewed By:

Chris Ward

Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.





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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



BASE @ 5' L1208050-01 Solid

Collected by
Matt Smith

Collected date/time
04/10/20 10:00

Received date/time
04/11/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1460082	1	04/15/20 11:40	04/15/20 11:40	CCE	Mt. Juliet, TN
Calculated Results	WG1459600	1	04/13/20 01:32	04/16/20 15:13	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1460818	1	04/15/20 10:00	04/16/20 15:13	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1461023	1	04/15/20 18:00	04/15/20 19:00	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1461108	1	04/15/20 15:01	04/15/20 15:44	MJA	Mt. Juliet, TN
Mercury by Method 7471A	WG1459615	1	04/13/20 15:25	04/13/20 22:48	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1459600	1	04/13/20 01:32	04/13/20 20:27	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015/8021	WG1461574	1.01	04/14/20 13:03	04/16/20 17:05	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1459891	1	04/14/20 00:42	04/14/20 13:44	FM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1461265	1	04/16/20 01:22	04/17/20 01:16	AAT	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCOUNT:

Foundation Energy Management LLC

PROJECT:

FOUNDATION ENERGY:FE

SDG:

L1208050

DATE/TIME:

04/20/20 14:50

PAGE:

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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

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.343		1	04/15/2020 11:40	WG1460082

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	12.2		1.00	1	04/16/2020 15:13	WG1459600

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND	J6 Q1	2.00	1	04/16/2020 15:13	WG1460818

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	T8	1	04/15/2020 19:00	WG1461023

Sample Narrative:

L1208050-01 WG1461023: 8.7 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	272		10.0	1	04/15/2020 15:44	WG1461108

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0410		0.0400	1	04/13/2020 22:48	WG1459615

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.74		2.00	1	04/13/2020 20:27	WG1459600
Barium	176		0.500	1	04/13/2020 20:27	WG1459600
Cadmium	ND		0.500	1	04/13/2020 20:27	WG1459600
Chromium	12.2		1.00	1	04/13/2020 20:27	WG1459600
Copper	15.4		2.00	1	04/13/2020 20:27	WG1459600
Lead	16.9		0.500	1	04/13/2020 20:27	WG1459600
Nickel	13.4		2.00	1	04/13/2020 20:27	WG1459600
Selenium	ND		2.00	1	04/13/2020 20:27	WG1459600
Silver	ND		1.00	1	04/13/2020 20:27	WG1459600
Zinc	47.8		5.00	1	04/13/2020 20:27	WG1459600

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00223		0.000505	1.01	04/16/2020 17:05	WG1461574
Toluene	ND		0.00505	1.01	04/16/2020 17:05	WG1461574
Ethylbenzene	ND		0.000505	1.01	04/16/2020 17:05	WG1461574
Total Xylene	ND		0.00152	1.01	04/16/2020 17:05	WG1461574
TPH (GC/FID) Low Fraction	0.190	B	0.101	1.01	04/16/2020 17:05	WG1461574

¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		04/16/2020 17:05	WG1461574
(S) a,a,a-Trifluorotoluene(PID)	97.9		72.0-128		04/16/2020 17:05	WG1461574

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	7.91		4.00	1	04/14/2020 13:44	WG1459891
(S) o-Terphenyl	44.9		18.0-148		04/14/2020 13:44	WG1459891

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	04/17/2020 01:16	WG1461265
Acenaphthene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Acenaphthylene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Benzo(a)anthracene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Benzo(a)pyrene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Benzo(b)fluoranthene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Benzo(g,h,i)perylene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Benzo(k)fluoranthene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Chrysene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Dibenz(a,h)anthracene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Fluoranthene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Fluorene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/17/2020 01:16	WG1461265
Naphthalene	ND		0.0200	1	04/17/2020 01:16	WG1461265
Phenanthrene	0.00881		0.00600	1	04/17/2020 01:16	WG1461265
Pyrene	ND		0.00600	1	04/17/2020 01:16	WG1461265
1-Methylnaphthalene	ND		0.0200	1	04/17/2020 01:16	WG1461265
2-Methylnaphthalene	ND		0.0200	1	04/17/2020 01:16	WG1461265
2-Chloronaphthalene	ND		0.0200	1	04/17/2020 01:16	WG1461265
(S) p-Terphenyl-d14	77.9		23.0-120		04/17/2020 01:16	WG1461265
(S) Nitrobenzene-d5	71.3		14.0-149		04/17/2020 01:16	WG1461265
(S) 2-Fluorobiphenyl	67.5		34.0-125		04/17/2020 01:16	WG1461265

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3519330-1 04/16/20 14:49				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chromium,Hexavalent	U		0.640	2.00

L1207799-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1207799-01 04/16/20 14:53 • (DUP) R3519330-3 04/16/20 14:53						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3519330-2 04/16/20 14:50					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	25.1	105	80.0-120	

L1208050-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1208050-01 04/16/20 15:13 • (MS) R3519330-4 04/16/20 15:15 • (MSD) R3519330-5 04/16/20 15:16												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	20.0	ND	14.5	14.0	72.4	70.0	1	75.0-125	<u>J6</u>	<u>J6</u>	3.43	20

L1208050-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1208050-01 04/16/20 15:13 • (MS) R3519330-6 04/16/20 15:18							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Chromium,Hexavalent	665	ND	280	42.1	50	75.0-125	J6

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1207799-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1207799-01 04/15/20 19:00 • (DUP) R3518995-2 04/15/20 19:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	10.7	10.6	1	0.282		1

Sample Narrative:
OS: 10.65 at 21.8C
DUP: 10.62 at 21.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1208202-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1208202-02 04/15/20 19:00 • (DUP) R3518995-3 04/15/20 19:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.94	7.90	1	0.505		1

Sample Narrative:
OS: 7.94 at 20.6C
DUP: 7.9 at 20.7C

Laboratory Control Sample (LCS)

(LCS) R3518995-1 04/15/20 19:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:
LCS: 10.01 at 18.7C

Method Blank (MB)

(MB) R3518947-1 04/15/20 15:44

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1207799-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1207799-01 04/15/20 15:44 • (DUP) R3518947-3 04/15/20 15:44

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1940	1980	1	1.63		20

L1208050-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1208050-01 04/15/20 15:44 • (DUP) R3518947-4 04/15/20 15:44

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	272	270	1	0.516		20

Laboratory Control Sample (LCS)

(LCS) R3518947-2 04/15/20 15:44

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	445	445	100	85.0-115	



Method Blank (MB)

(MB) R3518282-1 04/13/20 20:59

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3518282-2 04/13/20 21:02

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Mercury	0.500	0.544	109	80.0-120	

L1207844-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1207844-06 04/13/20 21:04 • (MS) R3518282-3 04/13/20 21:12 • (MSD) R3518282-4 04/13/20 21:50

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.524	U	0.561	0.557	107	106	1	75.0-125			0.654	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3518297-1 04/13/20 19:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Copper	U		0.506	2.00
Lead	U		0.208	0.500
Nickel	U		0.490	2.00
Selenium	U		0.617	2.00
Silver	U		0.228	1.00
Zinc	1.18	J	0.939	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3518297-2 04/13/20 19:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.2	96.2	80.0-120	
Barium	100	102	102	80.0-120	
Cadmium	100	95.6	95.6	80.0-120	
Chromium	100	97.4	97.4	80.0-120	
Copper	100	99.2	99.2	80.0-120	
Lead	100	97.5	97.5	80.0-120	
Nickel	100	97.7	97.7	80.0-120	
Selenium	100	94.8	94.8	80.0-120	
Silver	20.0	18.5	92.3	80.0-120	
Zinc	100	96.3	96.3	80.0-120	

L1207862-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1207862-05 04/13/20 19:22 • (MS) R3518297-5 04/13/20 19:30 • (MSD) R3518297-6 04/13/20 19:32

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	154	12.1	163	159	97.8	95.4	1	75.0-125			2.33	20
Barium	154	232	373	387	91.2	100	1	75.0-125			3.70	20
Cadmium	154	0.454	153	150	99.1	97.2	1	75.0-125			1.87	20
Chromium	154	67.0	217	218	97.2	98.1	1	75.0-125			0.615	20
Copper	154	63.1	223	224	104	104	1	75.0-125			0.503	20
Lead	154	8.46	175	166	108	102	1	75.0-125			5.43	20



L1207862-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1207862-05 04/13/20 19:22 • (MS) R3518297-5 04/13/20 19:30 • (MSD) R3518297-6 04/13/20 19:32

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Nickel	154	112	265	275	99.2	105	1	75.0-125			3.43	20
Selenium	154	2.03	151	148	96.6	94.8	1	75.0-125			1.91	20
Silver	30.8	U	30.0	29.9	97.3	96.9	1	75.0-125			0.342	20
Zinc	154	72.8	222	216	96.8	92.8	1	75.0-125			2.78	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3519269-3 04/16/20 11:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	0.0723	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	107			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	102			72.0-128

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS)

(LCS) R3519269-1 04/16/20 10:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0465	93.0	76.0-121	
Toluene	0.0500	0.0485	97.0	80.0-120	
Ethylbenzene	0.0500	0.0495	99.0	80.0-124	
Total Xylene	0.150	0.138	92.0	37.0-160	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			103	72.0-128	

Laboratory Control Sample (LCS)

(LCS) R3519269-2 04/16/20 11:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.19	94.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			104	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			107	72.0-128	



Method Blank (MB)

(MB) R3518377-1 04/14/20 08:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	68.9			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3518377-2 04/14/20 08:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	41.2	82.4	50.0-150	
(S) o-Terphenyl			55.1	18.0-148	

L1207803-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1207803-06 04/14/20 11:37 • (MS) R3518377-3 04/14/20 11:49 • (MSD) R3518377-4 04/14/20 12:02

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 %
TPH (GC/FID) High Fraction	50.0	ND	34.0	36.7	68.0	73.4	1	50.0-150			7.64	20
(S) o-Terphenyl					43.5	47.7		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3519396-2 04/16/20 18:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	74.8			14.0-149
(S) 2-Fluorobiphenyl	73.4			34.0-125
(S) p-Terphenyl-d14	82.4			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3519396-1 04/16/20 17:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0539	67.4	50.0-126	
Acenaphthene	0.0800	0.0546	68.3	50.0-120	
Acenaphthylene	0.0800	0.0559	69.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0558	69.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0453	56.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0501	62.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0501	62.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0547	68.4	49.0-125	
Chrysene	0.0800	0.0565	70.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0513	64.1	47.0-125	
Fluoranthene	0.0800	0.0619	77.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3519396-1 04/16/20 17:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0560	70.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0515	64.4	46.0-125	
Naphthalene	0.0800	0.0528	66.0	50.0-120	
Phenanthrene	0.0800	0.0572	71.5	47.0-120	
Pyrene	0.0800	0.0520	65.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0499	62.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0481	60.1	50.0-120	
2-Chloronaphthalene	0.0800	0.0536	67.0	50.0-120	
(S) Nitrobenzene-d5			72.4	14.0-149	
(S) 2-Fluorobiphenyl			71.1	34.0-125	
(S) p-Terphenyl-d14			79.3	23.0-120	

L1208036-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1208036-09 04/16/20 22:30 • (MS) R3519396-3 04/16/20 22:51 • (MSD) R3519396-4 04/16/20 23:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0796	U	0.0555	0.0547	69.7	68.7	1	10.0-145			1.45	30
Acenaphthene	0.0796	U	0.0549	0.0546	69.0	68.6	1	14.0-127			0.548	27
Acenaphthylene	0.0796	U	0.0578	0.0574	72.6	72.1	1	21.0-124			0.694	25
Benzo(a)anthracene	0.0796	U	0.0574	0.0571	72.1	71.7	1	10.0-139			0.524	30
Benzo(a)pyrene	0.0796	U	0.0523	0.0523	65.7	65.7	1	10.0-141			0.000	31
Benzo(b)fluoranthene	0.0796	U	0.0498	0.0494	62.6	62.1	1	10.0-140			0.806	36
Benzo(g,h,i)perylene	0.0796	U	0.0512	0.0510	64.3	64.1	1	10.0-140			0.391	33
Benzo(k)fluoranthene	0.0796	U	0.0567	0.0578	71.2	72.6	1	10.0-137			1.92	31
Chrysene	0.0796	U	0.0575	0.0575	72.2	72.2	1	10.0-145			0.000	30
Dibenz(a,h)anthracene	0.0796	U	0.0519	0.0509	65.2	63.9	1	10.0-132			1.95	31
Fluoranthene	0.0796	U	0.0652	0.0655	81.9	82.3	1	10.0-153			0.459	33
Fluorene	0.0796	U	0.0560	0.0555	70.4	69.7	1	11.0-130			0.897	29
Indeno(1,2,3-cd)pyrene	0.0796	U	0.0519	0.0511	65.2	64.2	1	10.0-137			1.55	32
Naphthalene	0.0796	U	0.0536	0.0533	67.3	67.0	1	10.0-135			0.561	27
Phenanthrene	0.0796	U	0.0578	0.0576	72.6	72.4	1	10.0-144			0.347	31
Pyrene	0.0796	U	0.0544	0.0543	68.3	68.2	1	10.0-148			0.184	35
1-Methylnaphthalene	0.0796	U	0.0510	0.0508	64.1	63.8	1	10.0-142			0.393	28
2-Methylnaphthalene	0.0796	U	0.0489	0.0484	61.4	60.8	1	10.0-137			1.03	28
2-Chloronaphthalene	0.0796	U	0.0535	0.0530	67.2	66.6	1	29.0-120			0.939	24
(S) Nitrobenzene-d5					73.6	74.7		14.0-149				
(S) 2-Fluorobiphenyl					70.0	71.6		34.0-125				
(S) p-Terphenyl-d14					79.6	80.7		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



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	LA000356
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.



**Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form**

Client: <u>HRLCSCO</u>		<u>L1208050</u>	
Cooler Received/Opened On: <u>4 / 11 / 20</u>		Temperature: <u>6.7</u>	
Received By: <u>Monte Smith</u>			
Signature: <u>Monte Smith</u>			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	/		
COC Signed / Accurate?		/	
Bottles arrive intact?		/	
Correct bottles used?		/	
Sufficient volume sent?		/	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			