

## HRL Compliance Solutions- CO

Sample Delivery Group: L1168310  
Samples Received: 12/07/2019  
Project Number: MCLAUGHLIN 67-68-STO  
Description: Whiting Petroleum- Mclaughlin 67-68  
Site: MCLAUGHLIN 67-68  
Report To: Kris Rowe  
2385 F ½ Road  
Grand Junction, CO 81505

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.



## PILE #3 L1168310-01 Solid

Collected by  
Matt Smith

Collected date/time  
12/06/19 10:20

Received date/time  
12/07/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1393869	1	12/07/19 12:21	12/10/19 12:11	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1393212	1	12/09/19 07:15	12/09/19 14:51	KME	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

## PILE #3 L1168310-02 Solid

Collected by  
Matt Smith

Collected date/time  
12/06/19 10:20

Received date/time  
12/07/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1395041	1	12/12/19 14:04	12/12/19 14:04	EL	Mt. Juliet, TN
Calculated Results	WG1395034	1	12/11/19 18:23	12/13/19 14:28	JIC	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1395283	1	12/13/19 10:24	12/13/19 14:28	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1395051	1	12/12/19 12:57	12/13/19 13:00	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1395319	1	12/12/19 14:00	12/12/19 15:22	BAM	Mt. Juliet, TN
Mercury by Method 7471A	WG1395023	1	12/11/19 17:49	12/12/19 07:38	TRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1395034	1	12/11/19 18:23	12/12/19 19:45	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1395101	1	12/11/19 11:02	12/12/19 13:01	BMB	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1395073	1	12/12/19 07:10	12/12/19 11:45	DMG	Mt. Juliet, TN

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

ACCOUNT:

HRL Compliance Solutions- CO

PROJECT:

MCLAUGHLIN 67-68-STO

SDG:

L1168310

DATE/TIME:

12/13/19 16:42

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



## Volatile Organic Compounds (GC) by Method 8015D/8021B/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/10/2019 12:11	<a href="#">WG1393869</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	90.7		77.0-120		12/10/2019 12:11	<a href="#">WG1393869</a>

## 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	50.3		4.00	1	12/09/2019 14:51	<a href="#">WG1393212</a>
(S) <i>o</i> -Terphenyl	54.7		18.0-148		12/09/2019 14:51	<a href="#">WG1393212</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.26		1	12/12/2019 14:04	WG1395041

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	13.4		1.00	1	12/13/2019 14:28	<a href="#">WG1395034</a>

## 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	12/13/2019 14:28	<a href="#">WG1395283</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.91	<a href="#">T8</a>	1	12/13/2019 13:00	<a href="#">WG1395051</a>

## Sample Narrative:

L1168310-02 WG1395051: 7.91 at 19.3C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	3600		10.0	1	12/12/2019 15:22	<a href="#">WG1395319</a>

## Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0300	1	12/12/2019 07:38	<a href="#">WG1395023</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.88		2.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Barium	210		0.500	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Cadmium	ND		0.500	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Chromium	13.4		1.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Copper	10.4		2.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Lead	8.69		0.500	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Nickel	12.9		2.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Selenium	ND		2.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Silver	ND		1.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>
Zinc	42.1		5.00	1	12/12/2019 19:45	<a href="#">WG1395034</a>

## Volatile Organic Compounds (GC) by Method 8015D/8021B/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00211		0.000500	1	12/12/2019 13:01	<a href="#">WG1395101</a>
Toluene	ND		0.00500	1	12/12/2019 13:01	<a href="#">WG1395101</a>
Ethylbenzene	0.000505	<a href="#">B</a>	0.000500	1	12/12/2019 13:01	<a href="#">WG1395101</a>
Total Xylene	ND		0.00150	1	12/12/2019 13:01	<a href="#">WG1395101</a>
(S) a, a, a-Trifluorotoluene (PID)	93.3		72.0-128		12/12/2019 13:01	<a href="#">WG1395101</a>



Collected date/time: 12/06/19 10:20

L1168310

## 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	12/12/2019 11:45	<a href="#">WG1395073</a>
Acenaphthene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Acenaphthylene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Benzo(a)anthracene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Benzo(a)pyrene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Chrysene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Fluoranthene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Fluorene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Naphthalene	ND		0.0200	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Phenanthrene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
Pyrene	ND		0.00600	1	12/12/2019 11:45	<a href="#">WG1395073</a>
1-Methylnaphthalene	ND		0.0200	1	12/12/2019 11:45	<a href="#">WG1395073</a>
2-Methylnaphthalene	ND		0.0200	1	12/12/2019 11:45	<a href="#">WG1395073</a>
2-Chloronaphthalene	ND		0.0200	1	12/12/2019 11:45	<a href="#">WG1395073</a>
(S) p-Terphenyl-d14	83.0		23.0-120		12/12/2019 11:45	<a href="#">WG1395073</a>
(S) Nitrobenzene-d5	54.9		14.0-149		12/12/2019 11:45	<a href="#">WG1395073</a>
(S) 2-Fluorobiphenyl	67.3		34.0-125		12/12/2019 11:45	<a href="#">WG1395073</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3482147-1 12/13/19 14:27

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

L1168310-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1168310-02 12/13/19 14:28 • (DUP) R3482147-3 12/13/19 14:28

	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) R3482147-2 12/13/19 14:28

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	23.4	97.7	80.0-120	

L1168310-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1168310-02 12/13/19 14:28 • (MS) R3482147-4 12/13/19 14:28 • (MSD) R3482147-5 12/13/19 14:29

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	20.0	ND	16.2	16.3	81.0	81.7	1	75.0-125			0.893	20

L1168310-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1168310-02 12/13/19 14:28 • (MS) R3482147-6 12/13/19 14:29

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Chromium,Hexavalent	669	ND	650	97.2	50	75.0-125	

1

Cp

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Tc

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Ss

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Cn

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Sr

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Qc

7

Gl

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Al

9

Sc



L1168310-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1168310-02 12/13/19 13:00 • (DUP) R3482155-2 12/13/19 13:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.91	7.85	1	0.761		1

Sample Narrative:  
OS: 7.91 at 19.3C  
DUP: 7.85 at 20.4C

L1168510-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1168510-02 12/13/19 13:00 • (DUP) R3482155-3 12/13/19 13:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.99	7.99	1	0.000		1

Sample Narrative:  
OS: 7.99 at 18C  
DUP: 7.99 at 18C

Laboratory Control Sample (LCS)

(LCS) R3482155-1 12/13/19 13:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:  
LCS: 9.97 at 18.3C

1

Cp

2

Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc



Method Blank (MB)

(MB) R3481813-1 12/12/19 15:22

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

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

L1168310-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1168310-02 12/12/19 15:22 • (DUP) R3481813-3 12/12/19 15:22

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	3600	3770	1	4.61		20

Laboratory Control Sample (LCS)

(LCS) R3481813-2 12/12/19 15:22

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	475	499	105	85.0-115	

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3481631-1 12/12/19 07:23

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

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

(LCS) R3481631-2 12/12/19 07:26 • (LCSD) R3481631-3 12/12/19 07:28

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.500	0.574	0.574	115	115	80.0-120			0.119	20

L1169292-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169292-01 12/12/19 07:31 • (MS) R3481631-4 12/12/19 07:33 • (MSD) R3481631-5 12/12/19 07:35

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.500	0.0212	0.564	0.559	109	107	1	75.0-125			1.04	20



Method Blank (MB)

(MB) R3481977-1 12/12/19 19:24

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	U		0.590	5.00

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

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

(LCS) R3481977-2 12/12/19 19:27 • (LCSD) R3481977-3 12/12/19 19:29

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	92.3	95.1	92.3	95.1	80.0-120			3.01	20
Barium	100	102	105	102	105	80.0-120			3.46	20
Cadmium	100	98.5	102	98.5	102	80.0-120			3.40	20
Chromium	100	103	107	103	107	80.0-120			4.38	20
Copper	100	102	106	102	106	80.0-120			3.78	20
Lead	100	97.0	101	97.0	101	80.0-120			4.00	20
Nickel	100	98.0	102	98.0	102	80.0-120			3.91	20
Selenium	100	104	108	104	108	80.0-120			3.41	20
Silver	20.0	18.8	19.7	94.1	98.5	80.0-120			4.56	20
Zinc	100	96.3	101	96.3	101	80.0-120			4.43	20

L1169425-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169425-01 12/12/19 19:32 • (MS) R3481977-6 12/12/19 19:40 • (MSD) R3481977-7 12/12/19 19:42

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 %
Arsenic	100	U	87.5	86.1	87.5	86.1	1	75.0-125			1.70	20
Barium	100	2.94	103	102	100	99.4	1	75.0-125			0.603	20
Cadmium	100	U	96.7	95.8	96.7	95.8	1	75.0-125			0.932	20
Chromium	100	1.79	104	103	102	101	1	75.0-125			0.678	20
Copper	100	3.40	105	123	101	119	1	75.0-125			15.6	20
Lead	100	63.9	163	462	99.2	398	1	75.0-125		J3 J5	95.6	20
Nickel	100	0.588	97.5	96.5	96.9	95.9	1	75.0-125			0.994	20



L1169425-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169425-01 12/12/19 19:32 • (MS) R3481977-6 12/12/19 19:40 • (MSD) R3481977-7 12/12/19 19:42

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 %
Selenium	100	U	101	99.5	101	99.5	1	75.0-125			1.68	20
Silver	20.0	U	18.8	18.6	94.0	92.9	1	75.0-125			1.25	20
Zinc	100	2.11	97.4	96.9	95.3	94.8	1	75.0-125			0.483	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3480973-2 12/10/19 10:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0249	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	98.6			77.0-120

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3480973-1 12/10/19 09:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.65	103	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	



Method Blank (MB)

(MB) R3481891-3 12/12/19 12:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000320	J	0.000150	0.00500
Ethylbenzene	0.000141	J	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
(S) a,a,a-Trifluorotoluene(PID)	98.4			72.0-128

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

Laboratory Control Sample (LCS)

(LCS) R3481891-1 12/12/19 10:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0488	97.6	76.0-121	
Toluene	0.0500	0.0467	93.4	80.0-120	
Ethylbenzene	0.0500	0.0494	98.8	80.0-124	
Total Xylene	0.150	0.131	87.3	37.0-160	
(S) a,a,a-Trifluorotoluene(PID)			101	72.0-128	

6  
Qc

7  
Gl

8  
Al

9  
Sc



Method Blank (MB)

(MB) R3480509-1 12/09/19 13:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	1.38	⌵	0.769	4.00
(S) o-Terphenyl	78.8			18.0-148

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3480509-2 12/09/19 13:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	48.1	96.2	50.0-150	
(S) o-Terphenyl			98.5	18.0-148	

L1168306-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1168306-01 12/09/19 15:16 • (MS) R3480509-3 12/09/19 15:29 • (MSD) R3480509-4 12/09/19 15:42

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	49.2	22.6	57.8	55.2	71.5	66.8	1	50.0-150			4.60	20
(S) o-Terphenyl					84.9	82.5		18.0-148				



Method Blank (MB)

(MB) R3481780-2 12/12/19 11:23

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	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		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	U		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	60.3			14.0-149
(S) 2-Fluorobiphenyl	70.9			34.0-125
(S) p-Terphenyl-d14	77.7			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3481780-1 12/12/19 11:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0574	71.8	50.0-126	
Acenaphthene	0.0800	0.0551	68.9	50.0-120	
Acenaphthylene	0.0800	0.0568	71.0	50.0-120	
Benzo(a)anthracene	0.0800	0.0579	72.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0497	62.1	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0581	72.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0610	76.3	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0582	72.8	49.0-125	
Chrysene	0.0800	0.0594	74.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0626	78.3	47.0-125	
Fluoranthene	0.0800	0.0615	76.9	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3481780-1 12/12/19 11:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0581	72.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0618	77.3	46.0-125	
Naphthalene	0.0800	0.0521	65.1	50.0-120	
Phenanthrene	0.0800	0.0574	71.8	47.0-120	
Pyrene	0.0800	0.0542	67.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0533	66.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0515	64.4	50.0-120	
2-Chloronaphthalene	0.0800	0.0529	66.1	50.0-120	
(S) Nitrobenzene-d5			60.3	14.0-149	
(S) 2-Fluorobiphenyl			71.3	34.0-125	
(S) p-Terphenyl-d14			80.8	23.0-120	

L1169153-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169153-13 12/12/19 17:41 • (MS) R3481780-3 12/12/19 18:03 • (MSD) R3481780-4 12/12/19 18:25

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	0.0784	U	0.0610	0.0625	77.8	79.3	1	10.0-145			2.43	30
Acenaphthene	0.0784	U	0.0582	0.0584	74.2	74.1	1	14.0-127			0.343	27
Acenaphthylene	0.0784	U	0.0619	0.0629	79.0	79.8	1	21.0-124			1.60	25
Benzo(a)anthracene	0.0784	U	0.0626	0.0609	79.8	77.3	1	10.0-139			2.75	30
Benzo(a)pyrene	0.0784	U	0.0583	0.0579	74.4	73.5	1	10.0-141			0.688	31
Benzo(b)fluoranthene	0.0784	U	0.0548	0.0540	69.9	68.5	1	10.0-140			1.47	36
Benzo(g,h,i)perylene	0.0784	0.00233	0.0724	0.0628	89.4	76.7	1	10.0-140			14.2	33
Benzo(k)fluoranthene	0.0784	U	0.0572	0.0585	73.0	74.2	1	10.0-137			2.25	31
Chrysene	0.0784	U	0.0602	0.0585	76.8	74.2	1	10.0-145			2.86	30
Dibenz(a,h)anthracene	0.0784	U	0.0639	0.0624	81.5	79.2	1	10.0-132			2.38	31
Fluoranthene	0.0784	U	0.0645	0.0633	82.3	80.3	1	10.0-153			1.88	33
Fluorene	0.0784	U	0.0615	0.0615	78.4	78.0	1	11.0-130			0.000	29
Indeno(1,2,3-cd)pyrene	0.0784	U	0.0635	0.0615	81.0	78.0	1	10.0-137			3.20	32
Naphthalene	0.0784	0.176	0.285	0.292	139	147	1	10.0-135	J5	J5	2.43	27
Phenanthrene	0.0784	U	0.0593	0.0587	75.6	74.5	1	10.0-144			1.02	31
Pyrene	0.0784	U	0.0568	0.0569	72.4	72.2	1	10.0-148			0.176	35
1-Methylnaphthalene	0.0784	0.0563	0.121	0.133	82.5	97.3	1	10.0-142			9.45	28
2-Methylnaphthalene	0.0784	0.105	0.174	0.198	88.0	118	1	10.0-137			12.9	28
2-Chloronaphthalene	0.0784	U	0.0567	0.0575	72.3	73.0	1	29.0-120			1.40	24
(S) Nitrobenzene-d5					85.1	81.2		14.0-149				
(S) 2-Fluorobiphenyl					75.5	69.4		34.0-125				
(S) p-Terphenyl-d14					87.3	83.8		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

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.
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.
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 <sup>1</sup>	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1 6</sup>	90010	South Carolina	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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:		L1168310	
Cooler Received/Opened On: 12 / 7 / 19		Temperature:	0.9
Received By: Monte Smith			
Signature: <i>Monte Smith</i>			
<b>Receipt Check List</b>			
	<b>NP</b>	<b>Yes</b>	<b>No</b>
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			



**Andy Vann**

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**From:** Chris Ward  
**Sent:** Wednesday, December 11, 2019 9:58 AM  
**To:** Project Service  
**Cc:** Sample Storage  
**Subject:** L1168310 \*HRLCSO\* Additions

Please add the rest of the TABLE910 Suite to a -02 of this SDG. Move the due date to 5 days from today

BTEX  
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](mailto:cward@pacenational.com) | [www.pacenational.com](http://www.pacenational.com)  
[615.773.9712](tel:615.773.9712)

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