

HRL Compliance Solutions- CO

Sample Delivery Group: L1544663
Samples Received: 10/08/2022
Project Number: RUBY LEE FED 2-32
Description: Vision Energy Ruby Lee Fed 2-32
Site: RUBY LEE FED 2-32
Report To: Matt Smith & Nick Cholas
2385 F ½ Road
Grand Junction, CO 81505

Entire Report Reviewed By:



Chris Ward
Project Manager

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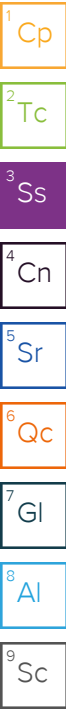


SAMPLE SUMMARY

SP 01 L1544663-01 Solid

Collected by J. Adams
Collected date/time 10/07/22 10:30
Received date/time 10/08/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1945341	1	11/03/22 16:01	11/03/22 16:01	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1941155	1	10/12/22 01:40	10/14/22 13:21	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1942356	1	10/15/22 06:00	10/15/22 08:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1940803	1	10/11/22 12:52	10/13/22 09:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1946586	1	10/24/22 23:11	10/27/22 09:10	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1941230	1	10/16/22 10:47	10/27/22 01:03	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1946585	5	10/24/22 21:12	10/25/22 22:07	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1941093	1	10/11/22 13:02	10/12/22 20:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1943303	1	10/11/22 13:02	10/16/22 18:41	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1942004	1	10/14/22 21:25	10/15/22 14:54	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1941989	1	10/14/22 04:00	10/14/22 19:45	AMM	Mt. Juliet, TN



BKGD1 L1544663-02 Solid

Collected by J. Adams
Collected date/time 10/07/22 10:40
Received date/time 10/08/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1945341	1	11/03/22 16:04	11/03/22 16:04	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1941155	1	10/12/22 01:40	10/14/22 13:26	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1942356	1	10/15/22 06:00	10/15/22 08:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1940803	1	10/11/22 12:52	10/13/22 09:10	NTG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1946594	5	10/25/22 09:22	10/26/22 17:38	JPD	Mt. Juliet, TN

BKGD2 L1544663-03 Solid

Collected by J. Adams
Collected date/time 10/07/22 10:45
Received date/time 10/08/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1945341	1	11/03/22 16:06	11/03/22 16:06	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1941155	1	10/12/22 01:40	10/14/22 13:49	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1942356	1	10/15/22 06:00	10/15/22 08:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1940803	1	10/11/22 12:52	10/13/22 09:10	NTG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1946594	5	10/25/22 09:22	10/26/22 17:41	JPD	Mt. Juliet, TN

BKGD3 L1544663-04 Solid

Collected by J. Adams
Collected date/time 10/07/22 10:50
Received date/time 10/08/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1946222	1	10/26/22 00:34	10/26/22 00:34	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1941155	1	10/12/22 01:40	10/14/22 14:15	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1942356	1	10/15/22 06:00	10/15/22 08:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1940803	1	10/11/22 12:52	10/13/22 09:10	NTG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1946594	5	10/25/22 09:22	10/26/22 17:44	JPD	Mt. Juliet, TN

CASE NARRATIVE

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	0.184		1	11/03/2022 16:01	WG1945341

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/14/2022 13:21	WG1941155

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.10	T8	1	10/15/2022 08:00	WG1942356

Sample Narrative:

L1544663-01 WG1942356: 8.1 at 20.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	207		10.0	1	10/13/2022 09:10	WG1940803

Sample Narrative:

L1544663-01 WG1940803: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	225	J3 J5	0.0852	0.500	1	10/27/2022 09:10	WG1946586
Cadmium	0.405	J	0.0471	0.500	1	10/27/2022 09:10	WG1946586
Copper	19.5		0.400	2.00	1	10/27/2022 09:10	WG1946586
Lead	39.0		0.208	0.500	1	10/27/2022 09:10	WG1946586
Nickel	13.0	O1	0.132	2.00	1	10/27/2022 09:10	WG1946586
Selenium	U		0.764	2.00	1	10/27/2022 09:10	WG1946586
Silver	U		0.127	1.00	1	10/27/2022 09:10	WG1946586
Zinc	62.1		0.832	5.00	1	10/27/2022 09:10	WG1946586

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.443		0.0167	0.200	1	10/27/2022 01:03	WG1941230

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.94		0.100	1.00	5	10/25/2022 22:07	WG1946585

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0459	J	0.0217	0.100	1	10/12/2022 20:37	WG1941093
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	87.3			77.0-120		10/12/2022 20:37	WG1941093

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/16/2022 18:41	WG1943303
Toluene	U		0.00130	0.00500	1	10/16/2022 18:41	WG1943303
Ethylbenzene	U		0.000737	0.00250	1	10/16/2022 18:41	WG1943303
Xylenes, Total	U		0.000880	0.00650	1	10/16/2022 18:41	WG1943303
1,2,4-Trimethylbenzene	0.00180	U	0.00158	0.00500	1	10/16/2022 18:41	WG1943303
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/16/2022 18:41	WG1943303
(S) Toluene-d8	103			75.0-131		10/16/2022 18:41	WG1943303
(S) 4-Bromofluorobenzene	94.9			67.0-138		10/16/2022 18:41	WG1943303
(S) 1,2-Dichloroethane-d4	84.7			70.0-130		10/16/2022 18:41	WG1943303

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.70		1.61	4.00	1	10/15/2022 14:54	WG1942004
C28-C36 Motor Oil Range	23.0		0.274	4.00	1	10/15/2022 14:54	WG1942004
(S) o-Terphenyl	65.1			18.0-148		10/15/2022 14:54	WG1942004

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/14/2022 19:45	WG1941989
Acenaphthene	U		0.00209	0.00600	1	10/14/2022 19:45	WG1941989
Acenaphthylene	U		0.00216	0.00600	1	10/14/2022 19:45	WG1941989
Benzo(a)anthracene	U		0.00173	0.00600	1	10/14/2022 19:45	WG1941989
Benzo(a)pyrene	U		0.00179	0.00600	1	10/14/2022 19:45	WG1941989
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/14/2022 19:45	WG1941989
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/14/2022 19:45	WG1941989
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/14/2022 19:45	WG1941989
Chrysene	U		0.00232	0.00600	1	10/14/2022 19:45	WG1941989
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/14/2022 19:45	WG1941989
Fluoranthene	U		0.00227	0.00600	1	10/14/2022 19:45	WG1941989
Fluorene	U		0.00205	0.00600	1	10/14/2022 19:45	WG1941989
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/14/2022 19:45	WG1941989
Naphthalene	U		0.00408	0.0200	1	10/14/2022 19:45	WG1941989
Phenanthrene	0.00310	U	0.00231	0.00600	1	10/14/2022 19:45	WG1941989
Pyrene	U		0.00200	0.00600	1	10/14/2022 19:45	WG1941989
1-Methylnaphthalene	U		0.00449	0.0200	1	10/14/2022 19:45	WG1941989
2-Methylnaphthalene	0.00450	U	0.00427	0.0200	1	10/14/2022 19:45	WG1941989
2-Chloronaphthalene	U		0.00466	0.0200	1	10/14/2022 19:45	WG1941989
(S) p-Terphenyl-d14	67.2			23.0-120		10/14/2022 19:45	WG1941989
(S) Nitrobenzene-d5	59.4			14.0-149		10/14/2022 19:45	WG1941989
(S) 2-Fluorobiphenyl	70.7			34.0-125		10/14/2022 19:45	WG1941989

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	0.184		1	11/03/2022 16:04	WG1945341

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/14/2022 13:26	WG1941155

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.82	T8	1	10/15/2022 08:00	WG1942356

Sample Narrative:

L1544663-02 WG1942356: 7.82 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	293		10.0	1	10/13/2022 09:10	WG1940803

Sample Narrative:

L1544663-02 WG1940803: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.24		0.100	1.00	5	10/26/2022 17:38	WG1946594

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.219		1	11/03/2022 16:06	WG1945341

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/14/2022 13:49	WG1941155

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.27	T8	1	10/15/2022 08:00	WG1942356

Sample Narrative:

L1544663-03 WG1942356: 8.27 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	144		10.0	1	10/13/2022 09:10	WG1940803

Sample Narrative:

L1544663-03 WG1940803: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.82		0.100	1.00	5	10/26/2022 17:41	WG1946594

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.248		1	10/26/2022 00:34	WG1946222

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/14/2022 14:15	WG1941155

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.11	T8	1	10/15/2022 08:00	WG1942356

Sample Narrative:

L1544663-04 WG1942356: 8.11 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	135		10.0	1	10/13/2022 09:10	WG1940803

Sample Narrative:

L1544663-04 WG1940803: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.98		0.100	1.00	5	10/26/2022 17:44	WG1946594

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Method Blank (MB)

(MB) R3853582-1 10/14/22 11:28

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Hexavalent Chromium	U		0.255	1.00

L1544561-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1544561-01 10/14/22 11:40 • (DUP) R3853582-3 10/14/22 11:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	0.454	0.437	1	4.01	⌵	20

L1544663-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1544663-04 10/14/22 14:15 • (DUP) R3853582-8 10/14/22 14:20

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

Laboratory Control Sample (LCS)

(LCS) R3853582-2 10/14/22 11:35

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.1	101	80.0-120	

L1544663-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1544663-03 10/14/22 13:49 • (MS) R3853582-4 10/14/22 13:54 • (MSD) R3853582-5 10/14/22 13:59

	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	%	%		%			%	%
Hexavalent Chromium	20.0	U	18.0	17.8	90.1	89.0	1	75.0-125			1.17	20

L1544663-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1544663-03 10/14/22 13:49 • (MS) R3853582-7 10/14/22 14:09

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	638	U	634	99.4	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1544649-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1544649-01 10/15/22 08:00 • (DUP) R3848751-2 10/15/22 08:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.83	7.88	1	0.637		1

Sample Narrative:
OS: 7.83 at 20.6C
DUP: 7.88 at 20.7C

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

L1544663-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1544663-04 10/15/22 08:00 • (DUP) R3848751-3 10/15/22 08:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.11	8.13	1	0.246		1

Sample Narrative:
OS: 8.11 at 20C
DUP: 8.13 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3848751-1 10/15/22 08:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.91	99.1	99.0-101	

Sample Narrative:
LCS: 9.91 at 20.3C

Method Blank (MB)

(MB) R3847934-1 10/13/22 09:10

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

Sample Narrative:

BLANK: at 25C

L1544661-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1544661-01 10/13/22 09:10 • (DUP) R3847934-3 10/13/22 09:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	777	776	1	0.129		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1544665-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1544665-05 10/13/22 09:10 • (DUP) R3847934-4 10/13/22 09:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	89.6	90.1	1	0.556		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3847934-2 10/13/22 09:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1100	98.0	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3853762-1 10/27/22 09:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	0.0934	⬇	0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3853762-2 10/27/22 09:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.6	97.6	80.0-120	
Cadmium	100	95.3	95.3	80.0-120	
Copper	100	97.3	97.3	80.0-120	
Lead	100	91.0	91.0	80.0-120	
Nickel	100	90.5	90.5	80.0-120	
Selenium	100	92.7	92.7	80.0-120	
Silver	20.0	17.5	87.3	80.0-120	
Zinc	100	97.3	97.3	80.0-120	

L1544663-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1544663-01 10/27/22 09:10 • (MS) R3853762-5 10/27/22 09:18 • (MSD) R3853762-6 10/27/22 09:21

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 %
Barium	100	225	320	431	95.5	206	1	75.0-125		J3 J5	29.5	20
Cadmium	100	0.405	89.0	88.3	88.6	87.9	1	75.0-125			0.771	20
Copper	100	19.5	111	111	91.2	91.4	1	75.0-125			0.138	20
Lead	100	39.0	130	128	91.5	89.5	1	75.0-125			1.50	20
Nickel	100	13.0	100	98.1	87.4	85.1	1	75.0-125			2.28	20
Selenium	100	U	85.8	83.6	85.8	83.6	1	75.0-125			2.66	20
Silver	20.0	U	16.4	16.1	82.0	80.6	1	75.0-125			1.69	20
Zinc	100	62.1	145	145	83.3	82.8	1	75.0-125			0.333	20

Method Blank (MB)

(MB) R3853492-1 10/27/22 00:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3853492-2 10/27/22 00:47 • (LCSD) R3853492-3 10/27/22 00:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.02	1.05	102	105	80.0-120			3.52	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3852937-1 10/25/22 22:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3852937-2 10/25/22 22:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.8	93.8	80.0-120	

L1544663-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1544663-01 10/25/22 22:07 • (MS) R3852937-5 10/25/22 22:17 • (MSD) R3852937-6 10/25/22 22:20

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	5.94	85.0	82.2	79.1	76.2	5	75.0-125			3.46	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3853438-1 10/26/22 16:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3853438-2 10/26/22 16:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.1	98.1	80.0-120	

L1544665-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1544665-08 10/26/22 16:56 • (MS) R3853438-5 10/26/22 17:05 • (MSD) R3853438-6 10/26/22 17:09

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	6.03	93.3	91.6	87.2	85.5	5	75.0-125			1.85	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3850220-2 10/12/22 13:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	89.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3850220-1 10/12/22 13:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.62	84.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.6	77.0-120	

1
Cp

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Tc

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Ss

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Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3849296-3 10/16/22 16:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	101			75.0-131
(S) 4-Bromofluorobenzene	92.2			67.0-138
(S) 1,2-Dichloroethane-d4	88.8			70.0-130

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

(LCS) R3849296-1 10/16/22 15:29 • (LCSD) R3849296-2 10/16/22 15:49

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 %
Benzene	0.125	0.126	0.131	101	105	70.0-123			3.89	20
Toluene	0.125	0.116	0.114	92.8	91.2	75.0-121			1.74	20
Ethylbenzene	0.125	0.111	0.115	88.8	92.0	74.0-126			3.54	20
Xylenes, Total	0.375	0.341	0.345	90.9	92.0	72.0-127			1.17	20
1,2,4-Trimethylbenzene	0.125	0.113	0.112	90.4	89.6	70.0-126			0.889	20
1,3,5-Trimethylbenzene	0.125	0.110	0.106	88.0	84.8	73.0-127			3.70	20
(S) Toluene-d8				91.5	88.8	75.0-131				
(S) 4-Bromofluorobenzene				102	103	67.0-138				
(S) 1,2-Dichloroethane-d4				95.8	96.3	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3848893-1 10/15/22 13:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	81.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3848893-2 10/15/22 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.6	71.2	50.0-150	
(S) o-Terphenyl			83.9	18.0-148	

L1544665-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1544665-01 10/15/22 14:54 • (MS) R3848893-3 10/15/22 15:08 • (MSD) R3848893-4 10/15/22 15:22

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 %
C10-C28 Diesel Range	49.5	93.8	132	132	77.2	77.2	1	50.0-150			0.000	20
(S) o-Terphenyl					51.8	48.2		18.0-148				

1
Cp

2
Tc

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Ss

4
Cn

5
Sr

6
Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3848778-2 10/14/22 15:46

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) p-Terphenyl-d14	84.7			23.0-120
(S) Nitrobenzene-d5	72.5			14.0-149
(S) 2-Fluorobiphenyl	85.6			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3848778-1 10/14/22 15:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0746	93.3	50.0-126	
Acenaphthene	0.0800	0.0722	90.3	50.0-120	
Acenaphthylene	0.0800	0.0723	90.4	50.0-120	
Benzo(a)anthracene	0.0800	0.0719	89.9	45.0-120	
Benzo(a)pyrene	0.0800	0.0685	85.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0699	87.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0715	89.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0720	90.0	49.0-125	
Chrysene	0.0800	0.0760	95.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0709	88.6	47.0-125	
Fluoranthene	0.0800	0.0774	96.8	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3848778-1 10/14/22 15:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0741	92.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0737	92.1	46.0-125	
Naphthalene	0.0800	0.0739	92.4	50.0-120	
Phenanthrene	0.0800	0.0724	90.5	47.0-120	
Pyrene	0.0800	0.0748	93.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0758	94.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0753	94.1	50.0-120	
2-Chloronaphthalene	0.0800	0.0707	88.4	50.0-120	
(S) p-Terphenyl-d14			89.2	23.0-120	
(S) Nitrobenzene-d5			79.1	14.0-149	
(S) 2-Fluorobiphenyl			92.2	34.0-125	

L1544663-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1544663-01 10/14/22 19:45 • (MS) R3848778-3 10/14/22 20:05 • (MSD) R3848778-4 10/14/22 20:25

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	0.0792	U	0.0612	0.0571	77.3	75.1	1	10.0-145			6.93	30
Acenaphthene	0.0792	U	0.0604	0.0564	76.3	74.2	1	14.0-127			6.85	27
Acenaphthylene	0.0792	U	0.0613	0.0567	77.4	74.6	1	21.0-124			7.80	25
Benzo(a)anthracene	0.0792	U	0.0615	0.0576	77.7	75.8	1	10.0-139			6.55	30
Benzo(a)pyrene	0.0792	U	0.0645	0.0595	81.4	78.3	1	10.0-141			8.06	31
Benzo(b)fluoranthene	0.0792	U	0.0564	0.0516	71.2	67.9	1	10.0-140			8.89	36
Benzo(g,h,i)perylene	0.0792	U	0.0586	0.0536	74.0	70.5	1	10.0-140			8.91	33
Benzo(k)fluoranthene	0.0792	U	0.0569	0.0517	71.8	68.0	1	10.0-137			9.58	31
Chrysene	0.0792	U	0.0635	0.0590	80.2	77.6	1	10.0-145			7.35	30
Dibenz(a,h)anthracene	0.0792	U	0.0575	0.0523	72.6	68.8	1	10.0-132			9.47	31
Fluoranthene	0.0792	U	0.0660	0.0610	83.3	80.3	1	10.0-153			7.87	33
Fluorene	0.0792	U	0.0629	0.0583	79.4	76.7	1	11.0-130			7.59	29
Indeno(1,2,3-cd)pyrene	0.0792	U	0.0612	0.0566	77.3	74.5	1	10.0-137			7.81	32
Naphthalene	0.0792	U	0.0646	0.0610	81.6	80.3	1	10.0-135			5.73	27
Phenanthrene	0.0792	0.00310	0.0640	0.0591	76.9	73.7	1	10.0-144			7.96	31
Pyrene	0.0792	U	0.0625	0.0578	78.9	76.1	1	10.0-148			7.81	35
1-Methylnaphthalene	0.0792	U	0.0698	0.0643	88.1	84.6	1	10.0-142			8.20	28
2-Methylnaphthalene	0.0792	0.00450	0.0688	0.0645	81.2	78.9	1	10.0-137			6.45	28
2-Chloronaphthalene	0.0792	U	0.0585	0.0537	73.9	70.7	1	29.0-120			8.56	24
(S) p-Terphenyl-d14					72.5	72.6		23.0-120				
(S) Nitrobenzene-d5					66.5	66.4		14.0-149				
(S) 2-Fluorobiphenyl					77.7	76.5		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

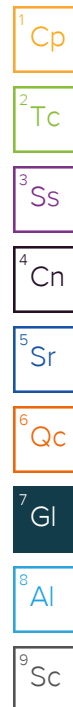
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
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.
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.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
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}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

