

Caerus Oil and Gas

Sample Delivery Group: L1612485

Samples Received: 05/04/2023

Project Number:

Description: 909 J

Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward
Project Manager

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20230503-OUSOURCE-(C100U-T-D) L1612485-01 GW

Collected by: Will Harmon
 Collected date/time: 05/03/23 08:25
 Received date/time: 05/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG2056450	1	05/09/23 14:35	05/09/23 14:35	ARD	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2054294	1	05/05/23 19:36	05/05/23 19:36	AEC	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2055175	1	05/05/23 08:49	05/05/23 17:24	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG2055305	1	05/09/23 14:22	05/09/23 14:22	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG2055362	1	05/11/23 10:16	05/11/23 10:16	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2054446	10	05/04/23 23:50	05/04/23 23:50	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2054446	100	05/05/23 00:03	05/05/23 00:03	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2055065	1	05/07/23 12:34	05/07/23 18:14	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2055065	10	05/07/23 12:34	05/07/23 20:50	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2055779	20	05/08/23 11:34	05/08/23 11:34	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2055551	1	05/06/23 21:48	05/06/23 21:48	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2056817	25	05/10/23 00:21	05/10/23 00:21	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2057129	1	05/10/23 16:36	05/11/23 07:56	MWS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2057129	5	05/10/23 16:36	05/11/23 14:10	MWS	Mt. Juliet, TN

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

TRIP BLANK L1612485-03 GW

Collected by: Will Harmon
 Collected date/time: 05/03/23 00:00
 Received date/time: 05/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2055551	1	05/06/23 21:07	05/06/23 21:07	KSD	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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Alkalinity	222		8.45	20.0	1	05/09/2023 14:35	WG2056450
Alkalinity,Bicarbonate	222		8.45	20.0	1	05/09/2023 14:35	WG2056450
Alkalinity,Carbonate	U		8.45	20.0	1	05/09/2023 14:35	WG2056450

Sample Narrative:

L1612485-01 WG2056450: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	U		0.0500	0.100	1	05/05/2023 19:36	WG2054294

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Phosphorus>Total	0.211	<u>B</u>	0.0350	0.100	1	05/05/2023 17:24	WG2055175

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	pH			date / time	
pH	6.43	<u>T8</u>	1	05/09/2023 14:22	WG2055305

Sample Narrative:

L1612485-01 WG2055305: 6.43 at 21C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	umhos/cm		umhos/cm		date / time	
Specific Conductance	26400		10.0	1	05/11/2023 10:16	WG2055362

Sample Narrative:

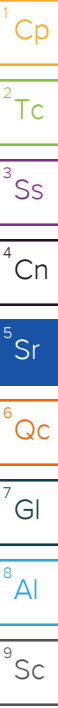
L1612485-01 WG2055362: at 25C

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Bromide	83.6		3.53	10.0	10	05/04/2023 23:50	WG2054446
Chloride	9060		37.9	100	100	05/05/2023 00:03	WG2054446
Fluoride	U		0.640	1.50	10	05/04/2023 23:50	WG2054446
Nitrate as (N)	U		0.480	1.00	10	05/04/2023 23:50	WG2054446
Nitrite as (N)	U		0.420	1.00	10	05/04/2023 23:50	WG2054446
Sulfate	U		5.94	50.0	10	05/04/2023 23:50	WG2054446

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Barium	31.3		0.000736	0.00500	1	05/07/2023 18:14	WG2055065
Boron	15.9		0.0200	0.200	1	05/07/2023 18:14	WG2055065
Calcium	294		0.0793	1.00	1	05/07/2023 18:14	WG2055065
Iron	54.7		0.0180	0.100	1	05/07/2023 18:14	WG2055065
Magnesium	31.4		0.0853	1.00	1	05/07/2023 18:14	WG2055065
Manganese	0.703		0.000934	0.0100	1	05/07/2023 18:14	WG2055065
Potassium	49.1		0.261	2.00	1	05/07/2023 18:14	WG2055065



Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Selenium	U		0.00735	0.0100	1	05/07/2023 18:14	WG2055065
Sodium	5210		5.04	30.0	10	05/07/2023 20:50	WG2055065
Strontium	59.4		0.00640	0.100	10	05/07/2023 20:50	WG2055065

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPH (GC/FID) Low Fraction	6.59		0.628	2.00	20	05/08/2023 11:34	WG2055779
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.2			78.0-120		05/08/2023 11:34	WG2055779

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.391		0.00235	0.0250	25	05/10/2023 00:21	WG2056817
Toluene	0.729		0.00695	0.0250	25	05/10/2023 00:21	WG2056817
Ethylbenzene	0.0392		0.000137	0.00100	1	05/06/2023 21:48	WG2055551
Xylenes, Total	0.855		0.00435	0.0750	25	05/10/2023 00:21	WG2056817
Naphthalene	0.0188		0.00100	0.00500	1	05/06/2023 21:48	WG2055551
(S) <i>Toluene-d8</i>	94.8			80.0-120		05/06/2023 21:48	WG2055551
(S) <i>Toluene-d8</i>	98.1			80.0-120		05/10/2023 00:21	WG2056817
(S) <i>4-Bromofluorobenzene</i>	109			77.0-126		05/06/2023 21:48	WG2055551
(S) <i>4-Bromofluorobenzene</i>	98.0			77.0-126		05/10/2023 00:21	WG2056817
(S) <i>1,2-Dichloroethane-d4</i>	109			70.0-130		05/06/2023 21:48	WG2055551
(S) <i>1,2-Dichloroethane-d4</i>	99.4			70.0-130		05/10/2023 00:21	WG2056817

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
C10-C28 Diesel Range	11.5		0.111	0.500	5	05/11/2023 14:10	WG2057129
C28-C36 Motor Oil Range	1.21		0.0118	0.100	1	05/11/2023 07:56	WG2057129
(S) <i>o</i> -Terphenyl	60.5			52.0-156		05/11/2023 07:56	WG2057129
(S) <i>o</i> -Terphenyl	167	J1		52.0-156		05/11/2023 14:10	WG2057129

Sample Narrative:

L1612485-01 WG2057129: Dilution and surrogate failure due to matrix interference.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	U		0.0000941	0.00100	1	05/06/2023 21:07	WG2055551
Toluene	U		0.000278	0.00100	1	05/06/2023 21:07	WG2055551
Ethylbenzene	U		0.000137	0.00100	1	05/06/2023 21:07	WG2055551
Xylenes, Total	U		0.000174	0.00300	1	05/06/2023 21:07	WG2055551
Naphthalene	U		0.00100	0.00500	1	05/06/2023 21:07	WG2055551
(S) Toluene-d8	105			80.0-120		05/06/2023 21:07	WG2055551
(S) 4-Bromofluorobenzene	98.0			77.0-126		05/06/2023 21:07	WG2055551
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/06/2023 21:07	WG2055551

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

Method Blank (MB)

(MB) R3922652-2 05/09/23 09:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1611086-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1611086-01 05/09/23 09:38 • (DUP) R3922652-4 05/09/23 09:42

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Alkalinity	1340	1330	1	0.517		20
Alkalinity,Bicarbonate	1340	1330	1	0.517		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1611722-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1611722-03 05/09/23 13:51 • (DUP) R3922652-6 05/09/23 13:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Alkalinity	1710	1720	1	0.679		20
Alkalinity,Bicarbonate	1710	1720	1	0.679		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3922652-1 05/09/23 08:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	100	100	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3921605-1 05/05/23 19:17

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Nitrate-Nitrite	U		0.0500	0.100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1612482-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1612482-02 05/05/23 19:23 • (DUP) R3921605-3 05/05/23 19:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate-Nitrite	0.387	0.384	1	0.778		20

L1612621-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1612621-04 05/05/23 21:29 • (DUP) R3921605-11 05/05/23 21:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate-Nitrite	3.12	3.10	2	0.643		20

Laboratory Control Sample (LCS)

(LCS) R3921605-2 05/05/23 19:18

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Nitrate-Nitrite	2.50	2.61	104	90.0-110	

L1612482-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1612482-02 05/05/23 19:23 • (MS) R3921605-4 05/05/23 19:26

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Nitrate-Nitrite	2.50	0.387	3.11	109	1	90.0-110	

L1612621-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1612621-04 05/05/23 21:29 • (MS) R3921605-12 05/05/23 21:31 • (MSD) R3921605-13 05/05/23 21:33

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Nitrate-Nitrite	2.50	3.12	5.66	5.82	102	108	2	90.0-110			2.79	20

Method Blank (MB)

(MB) R3921583-1 05/05/23 17:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Phosphorus,Total	0.0401	↓	0.0350	0.100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1610942-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1610942-01 05/05/23 17:07 • (DUP) R3921583-3 05/05/23 17:08

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Phosphorus,Total	0.178	0.201	1	12.1		20

L1611998-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1611998-01 05/05/23 17:12 • (DUP) R3921583-6 05/05/23 17:13

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Phosphorus,Total	3.83	3.77	1	1.58		20

Laboratory Control Sample (LCS)

(LCS) R3921583-2 05/05/23 17:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Phosphorus,Total	4.66	4.31	92.5	83.2-116	

L1610942-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1610942-01 05/05/23 17:07 • (MS) R3921583-4 05/05/23 17:09 • (MSD) R3921583-5 05/05/23 17:11

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Phosphorus,Total	2.50	0.178	2.51	2.40	93.3	88.9	1	90.0-110		J6	4.48	20

Sample Narrative:

MSD: Matrix spike failure due to matrix.

Laboratory Control Sample (LCS)

(LCS) R3922628-1 05/09/23 14:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10 at 20.6C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3923490-1 05/11/23 10:16

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

L1612496-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1612496-01 05/11/23 10:16 • (DUP) R3923490-3 05/11/23 10:16

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	50700	50200	1	0.991		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3923490-2 05/11/23 10:16

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1090	97.1	85.0-115	

Sample Narrative:

LCS: at 25C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3921482-1 05/04/23 21:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Nitrite	U		0.0420	0.100
Sulfate	U		0.594	5.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

L1610177-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1610177-04 05/05/23 02:24 • (DUP) R3921482-3 05/05/23 02:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	U	1	0.000		15
Chloride	2.20	2.16	1	1.81		15
Fluoride	0.288	0.294	1	2.06		15
Nitrate	0.899	0.885	1	1.64		15
Nitrite	U	U	1	0.000		15
Sulfate	4.70	4.58	1	2.49	U	15

6 Qc

7 Gl

8 Al

9 Sc

L1610177-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1610177-11 05/05/23 04:58 • (DUP) R3921482-6 05/05/23 05:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	U	1	0.000		15
Chloride	4.75	4.73	1	0.333		15
Fluoride	0.202	0.208	1	3.07		15
Nitrate	0.773	0.767	1	0.701		15
Nitrite	U	U	1	0.000		15
Sulfate	8.13	8.08	1	0.580		15

Laboratory Control Sample (LCS)

(LCS) R3921482-2 05/04/23 21:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	38.1	95.1	80.0-120	
Chloride	40.0	38.0	95.0	80.0-120	
Fluoride	8.00	7.77	97.1	80.0-120	
Nitrate	8.00	7.60	95.0	80.0-120	
Nitrite	8.00	7.82	97.7	80.0-120	
Sulfate	40.0	37.8	94.4	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1610177-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1610177-04 05/05/23 02:24 • (MS) R3921482-4 05/05/23 02:49 • (MSD) R3921482-5 05/05/23 03:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	U	45.1	46.0	90.3	92.0	1	80.0-120			1.86	15
Chloride	50.0	2.20	49.2	50.1	94.0	95.8	1	80.0-120			1.85	15
Fluoride	5.00	0.288	4.92	5.02	92.6	94.7	1	80.0-120			2.10	15
Nitrate	5.00	0.899	5.53	5.61	92.6	94.2	1	80.0-120			1.46	15
Nitrite	5.00	U	4.94	5.03	98.8	101	1	80.0-120			1.91	15
Sulfate	50.0	4.70	50.7	51.8	92.0	94.2	1	80.0-120			2.11	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1610177-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1610177-11 05/05/23 04:58 • (MS) R3921482-7 05/05/23 05:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	U	46.4	92.9	1	80.0-120	
Chloride	50.0	4.75	52.9	96.3	1	80.0-120	
Fluoride	5.00	0.202	5.01	96.1	1	80.0-120	
Nitrate	5.00	0.773	5.55	95.6	1	80.0-120	
Nitrite	5.00	U	5.08	102	1	80.0-120	
Sulfate	50.0	8.13	55.6	95.0	1	80.0-120	

Method Blank (MB)

(MB) R3921855-1 05/07/23 17:55

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Barium	U		0.000736	0.00500
Boron	U		0.0200	0.200
Calcium	U		0.0793	1.00
Iron	0.0361	U	0.0180	0.100
Magnesium	U		0.0853	1.00
Manganese	U		0.000934	0.0100
Potassium	U		0.261	2.00
Selenium	U		0.00735	0.0100
Sodium	0.927	U	0.504	3.00
Strontium	U		0.000640	0.0100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3921855-2 05/07/23 17:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Barium	1.00	0.988	98.8	80.0-120	
Boron	1.00	0.948	94.8	80.0-120	
Calcium	10.0	9.64	96.4	80.0-120	
Iron	10.0	9.75	97.5	80.0-120	
Magnesium	10.0	9.58	95.8	80.0-120	
Manganese	1.00	0.925	92.5	80.0-120	
Potassium	10.0	9.05	90.5	80.0-120	
Selenium	1.00	0.988	98.8	80.0-120	
Sodium	10.0	9.78	97.8	80.0-120	
Strontium	1.00	0.936	93.6	80.0-120	

L1612892-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1612892-04 05/07/23 18:00 • (MS) R3921855-4 05/07/23 18:06 • (MSD) R3921855-5 05/07/23 18:08

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Barium	1.00	0.0171	1.01	1.00	99.4	98.5	1	75.0-125			0.921	20
Boron	1.00	0.0412	1.03	1.02	99.2	98.1	1	75.0-125			1.10	20
Calcium	10.0	149	158	157	96.6	87.8	1	75.0-125			0.554	20
Iron	10.0	0.180	9.96	9.82	97.8	96.4	1	75.0-125			1.35	20
Magnesium	10.0	10.7	20.2	20.0	95.1	93.8	1	75.0-125			0.637	20
Manganese	1.00	0.0661	0.999	0.990	93.3	92.4	1	75.0-125			0.930	20
Potassium	10.0	5.45	15.1	15.1	96.4	96.4	1	75.0-125			0.0383	20

L1612892-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1612892-04 05/07/23 18:00 • (MS) R3921855-4 05/07/23 18:06 • (MSD) R3921855-5 05/07/23 18:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Selenium	1.00	U	1.03	1.03	103	103	1	75.0-125			0.206	20
Sodium	10.0	18.7	27.0	26.7	83.3	80.3	1	75.0-125			1.10	20
Strontium	1.00	0.985	1.96	1.96	97.6	97.8	1	75.0-125			0.0923	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3923660-2 05/08/23 06:28

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	0.0342	↓	0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	88.2			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3923660-1 05/08/23 05:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.46	99.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			93.4	78.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3922650-5 05/06/23 16:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
(S) Toluene-d8	106			80.0-120
(S) 4-Bromofluorobenzene	100			77.0-126
(S) 1,2-Dichloroethane-d4	110			70.0-130

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

(LCS) R3922650-1 05/06/23 14:19 • (LCSD) R3922650-2 05/06/23 14:39

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.00500	0.00544	0.00553	109	111	70.0-123			1.64	20
Toluene	0.00500	0.00497	0.00495	99.4	99.0	79.0-120			0.403	20
Ethylbenzene	0.00500	0.00462	0.00468	92.4	93.6	79.0-123			1.29	20
Xylenes, Total	0.0150	0.0138	0.0142	92.0	94.7	79.0-123			2.86	20
Naphthalene	0.00500	0.00405	0.00450	81.0	90.0	54.0-135			10.5	20
(S) Toluene-d8				104	105	80.0-120				
(S) 4-Bromofluorobenzene				98.3	97.9	77.0-126				
(S) 1,2-Dichloroethane-d4				107	110	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3923184-3 05/09/23 19:08

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
<i>(S) Toluene-d8</i>	97.3			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	90.9			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	98.9			70.0-130

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

(LCS) R3923184-1 05/09/23 18:05 • (LCSD) R3923184-2 05/09/23 18:26

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.00500	0.00538	0.00510	108	102	70.0-123			5.34	20
Toluene	0.00500	0.00476	0.00458	95.2	91.6	79.0-120			3.85	20
Xylenes, Total	0.0150	0.0140	0.0132	93.3	88.0	79.0-123			5.88	20
<i>(S) Toluene-d8</i>				95.9	96.7	80.0-120				
<i>(S) 4-Bromofluorobenzene</i>				93.6	96.6	77.0-126				
<i>(S) 1,2-Dichloroethane-d4</i>				98.4	101	70.0-130				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3923522-3 05/11/23 02:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C36 Motor Oil Range	U		0.0118	0.100
<i>(S) o-Terphenyl</i>	108			52.0-156

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

(LCS) R3923522-1 05/11/23 01:32 • (LCSD) R3923522-2 05/11/23 01:52

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
C10-C28 Diesel Range	1.50	1.55	1.59	103	106	50.0-150			2.55	20
<i>(S) o-Terphenyl</i>				110	108	52.0-156				

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

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

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

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.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

41612485

<u>Tracking Numbers</u>	<u>NSAT Temperature</u>
6126 6537 5471	3.8 to = 3.8
5755 2085 1657	1.4 to = 1
5755 2085 1668	3.7 to = 3.7