October 10, 2022

Jake Janicek
Environmental Lead
Caerus Oil & Gas LLC (Operator #: 10456)
jjanicek@caerusoilandgas.com

Report of Work Completed – Flowline Release

COGCC Location Name (ID)	NPR /A03-596 (335720)
Operator Location Name	A03 596
COGCC Spill/Release Point ID	482722
Legal Description	SENE Sec. 3 T5S-R96W
Coordinates (Lat/Long)	39.647904/-108.147875
County	Garfield County, Colorado

Mr. Janicek,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for Caerus Oil & Gas LLC (Caerus) to document recent investigation activities associated with a produced water release at the A03 596 well pad (Location). The Location is 14.2 miles north of Parachute, Colorado in Garfield County as illustrated in the attached Topographic Location Map. Additional information on the Location and the associated remedial investigation is provided in the title block above, the attached Site Diagram, and laboratory analytical reports. This ROWC provides background on the Location, methods used to complete the site investigation, results of the investigation, and recommendations for how to proceed with this information.

Background

On August 15, 2022, a flowline at the Location failed a pressure test. The flowline was exposed, and the point of release (POR) was identified. An unknown volume of produced water was released from the flowline prior to the failed pressure test. The release was reported via Colorado Oil and Gas Conservation Commission (COGCC) Form 19 Document 403136417 to open Spill/Release Point ID 482722.

Methodology

On August 31, 2022, Confluence was onsite to conduct initial site investigation. The flowline had been trenched and exposed to identify the POR. A total of five soil samples were collected from the excavation: one soil sample was collected from the base beneath the POR, two soil samples were collected from the north sidewall, one soil sample was collected from the south sidewall, and one soil sample was collected from the trench base northeast of the POR. A composite sample was also collected from the excavation stockpile. Investigation activities were directed by Confluence personnel who characterized soil using visual and olfactory observations and field-screened soil samples for volatile organic compounds (VOC) using a photoionization detector (PID).

All collected samples were placed in laboratory provided containers, immediately placed on ice, and shipped for laboratory analysis of COGCC Table 915-1 constituents of concern under chain of custody. The excavation area and sample locations are illustrated in the attached Site Diagrams.

Results

These results summarize observations from onsite investigation efforts and associated laboratory analytical results. For organizational and presentation purposes, the results summary is divided between general observations of lithology and hydrogeology for the entire Location and excavation activities. Collected spatial data are depicted in the attached Site Diagram. Laboratory analytical reports are attached and summarized in the Laboratory Results Summary Table.

Lithology and Hydrogeology

Lithology at the Location is characterized by sandy loam. Based on the 250 foot elevation difference between the Location and Corral Springs tributary 0.2 miles north of the Location, depth to groundwater at the Location is estimated to be approximately 200 feet below ground surface (bgs). Groundwater is expected to flow north toward Corral Springs tributary and ultimately to the Colorado River, located 14.0 miles southeast of the Location.

Excavation Results

Analytical results of excavation samples are within COGCC Table 915-1 Residential Soil Screening Levels except for total petroleum hydrocarbons (TPH), sodium adsorption ratio (SAR), pH, and arsenic. TPH exceedances range from 4,880 milligrams per kilogram (mg/kg) at the POR to 6,145 mg/kg in the south sidewall. SAR exceedances range from 8.01 at the POR to 16.5 in the south sidewall. The northwest sidewall exceeds allowable limits for pH at 8.54. Arsenic exceedances range from 2.92 mg/kg at the POR to 5.54 mg/kg at the base of the trench northeast of the POR. PID measurements ranged from 7.4 parts per million (ppm) at the northeastern trench base to 3516 ppm at the POR. A hydrocarbon odor was noted at the POR, in the south sidewall, and in the northwest sidewall. None of the samples demonstrated hydrocarbon staining, and groundwater was not encountered during excavation or sampling activities.

Stockpile Results

Analytical results of the stockpile sample are within COGCC Table 915-1 Residential Soil Screening Levels except for pH and arsenic. Arsenic exceeds at 3.81 mg/kg, and pH exceeds at 8.87. The composite stockpile sample demonstrated a slight hydrocarbon odor and registered a PID measurement of 78.6 ppm.

Analysis and Recommendations

Organic and inorganic impacts above COGCC Table 915-1 Residential Soil Screening Levels remain in the release area, and inorganic impacts are present in the stockpile above allowable limits. Background data collected at the Location on July 28, 2010, indicates a native arsenic value of 8.8 mg/kg. Based on this result, Confluence recommends that Caerus request consideration of COGCC Table 915-1 Footnote 11 to establish an alternative allowable limit of 11.0 mg/kg for arsenic. Due to the estimated depth to water of 200 feet bgs, Confluence recommends that Caerus request to compare analytical results for Spill/Release Point ID 482722 to COGCC Table 915-1 Residential Soil Screening Levels as no reasonable path to groundwater appears to exist.

Assuming the proposed alternative allowable limit and screening level are accepted, TPH and SAR impacts remain undelineated vertically, to the east, and to the south. Soil pH impacts remain undelineated to the northeast and remain present in the stockpile. All other constituents of concern are within COGCC Table 915-1 Residential Soil Screening Levels or applicable alternative allowable limits. Based on these results, Confluence recommends additional site investigation to delineate organic impacts and the collection of background samples to establish native levels of inorganic constituents of concern at the Location. Prior to additional sampling, Confluence recommends that Caerus request a reduced analyte list of TPH, SAR, and pH.

Confluence is grateful for the opportunity to support you with this project. If you have any questions about the methods, results, or recommendations presented here, please do not hesitate to contact me.

Regards,

Sage Maher
Project Manager
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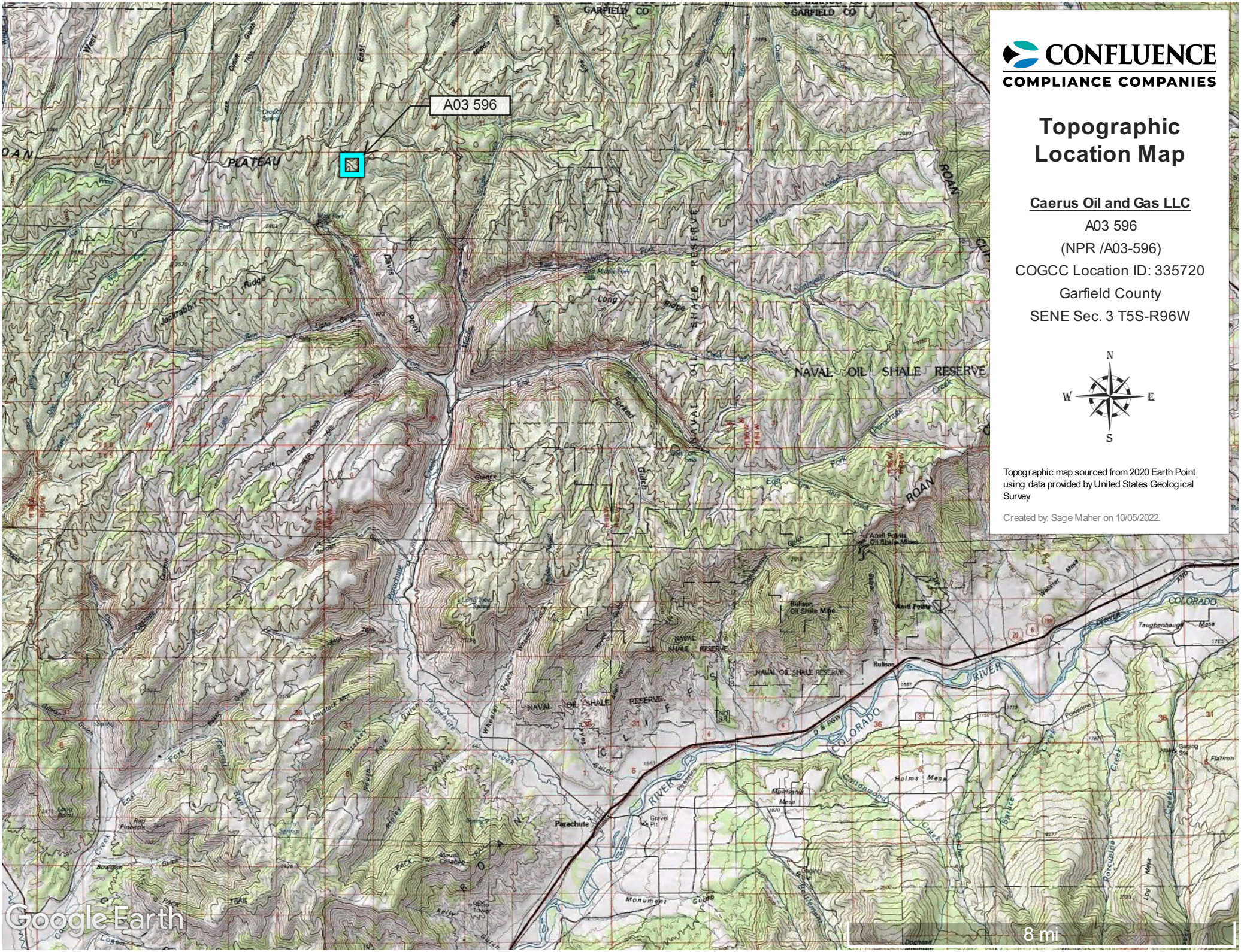
Chris McKisson
Managing Partner
(720) 490-6758
chris.mckisson@confluence-cc.com

Attachments

- Topographic Location Map
- Site Diagram – Initial Assessment
- Laboratory Results Summary Table
- Laboratory Analytical Reports



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COMPLIANCE COMPANIES

Topographic Location Map

Caerus Oil and Gas LLC

A03 596

(NPR /A03-596)

COGCC Location ID: 335720

Garfield County

SENE Sec. 3 T5S-R96W

N
W E
S

Topographic map sourced from 2020 Earth Point using data provided by United States Geological Survey.

Created by: Sage Maher on 10/05/2022.

CONFLUENCE
COMPLIANCE COMPANIES

Site Diagram
Initial Assessment

Caerus Oil and Gas LLC
A03 596
(NPR /A03-596)
COGCC Location ID: 335720
Garfield County
SENE Sec. 3 T5S-R95W

N
W E
S

Legend
- Soil Sample – 08/31/2022
- Excavation Extent – 08/31/2022
- Soil Stockpile – 08/31/2022

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Andrew Smith on 09/01/2022.

CONFLUENCE

Laboratory Results Summary Table - Soil
A03 596

10/10/2022

Soil Screening and Remediation Limits					Organic Compounds (mg/kg [ppm])																									
COGCC Table 915-1 Residential -->				NA	500	NA	NA	NA	1.2	490	5.8	58	30	27	360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	18	24	2	180
Sample Date	**Solid/Soil Source (Equipment)** [Vault/Sump, Separator, Tank Battery, Dump Line, Pit, Cuttings, Background, etc.]	**Depth - Z** (feet) **(NEGATIVE VALUE)** below ground surface (bgs)	**Sample ID**	**PID** (ppm)	**TPH (total volatile and extractable petroleum hydrocarbons) (GRO+DRO+ORO)**	**TPH-GRO (C6-C10) Low Fraction**	**TPH-DRO (C10-C28) High Fraction**	**TPH-ORO (C28-C36) High Fraction**	**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes - total (sum of o-, m-, p- isomers)**	**1,2,4-trimethylbenzene**	**1,3,5-trimethylbenzene**	**Acenaphthene**	**Anthracene**	**Benzo(A)anthracene**	**Benzo(A)pyrene**	**Benzo(B)fluoranthene**	**Benzo(K)fluoranthene**	**Chrysene**	**Dibenzo(A,H)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(1,2,3,C,D)pyrene**	**1- Methylnaphthalene**	**2- Methylnaphthalene**	**Naphthalene**	**Pyrene**
8/31/2022	Flowline	0	**20220831-A03_596_FL-STOCK_COMP**	**78.6**	**458**	**1.52**	**299**	**158**	**0.0169**	**0.0955**	**0.0112**	**0.178**	**0.0465**	**0.176**	*<0.00600*	**0.00251**	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	**0.0218**	*<0.00600*	**0.0416**	**0.0423**	**0.0159**	*<0.00600*
8/31/2022	Flowline	-4	**20220831-A03_596_FL-POR @ 4'**	**3516**	**4880**	**0.216**	**4830**	**50.1**	*<0.00100*	*<0.00500*	*<0.00250*	*<0.00650*	*<0.00500*	**0.0230**	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	**0.247**	*<0.00600*	**1.40**	**2.80**	**0.924**	*<0.00600*
8/31/2022	Flowline	-4	**20220831-A03_596_FL-N_TRENCH @4'**	**7.4**	**5130**	**0.123**	**5130**	*<80.0*	*<0.00100*	*<0.00500*	*<0.00250*	*<0.00650*	*<0.00500*	**0.0144**	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	**0.280**	*<0.00600*	**1.27**	**2.54**	**0.600**	*<0.00600*
8/31/2022	Flowline	-3	**20220831-A03_596_FL-SSW @ 3'**	**1098**	**6145**	**520**	**5540**	**84.7**	*<0.0800*	*<0.400*	*<0.200*	**9.76**	**9.95**	**10.2**	**0.0810**	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	**0.362**	*<0.00600*	**0.870**	**1.64**	**0.236**	**0.00692**
8/31/2022	Flowline	-3	**20220831-A03_596_FL-NESW @ 3'**	**79.9**	**150.0**	**1.30**	**62.2**	**86.5**	*<0.00100*	*<0.00500*	*<0.00250*	**0.165**	**0.0898**	**0.104**	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.0200*	*<0.0200*	*<0.0200*	*<0.00600*
8/31/2022	Flowline	-3	**20220831-A03_596_FL-NWSW @ 3'**	**320.8**	**190.1**	**1.41**	**91.1**	**97.6**	*<0.00100*	*<0.00500*	*<0.00250*	**0.0132**	*<0.00500*	**0.132**	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	*<0.00600*	**0.0104**	*<0.00600*	**0.0809**	**0.103**	**0.0450**	*<0.00600*
7/28/2010	Background	NA	**A03-N. BACK-072810**	*NA*	**5.0**	*<0.50*	**5.0**	*NA*	*<0.0025*	*<0.025*	*<0.0025*	*<0.0075*	*NA*	*NA*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	**0.0073**	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*	*<0.0060*

Confluence Compliance Companies, LLC
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Orange Fill = Exceedance
Dark Gray Italics = Below Reporting Detection Limit (RDL)
"NA" = Not Analyzed
mg/kg = milligrams per kilogram / parts per million

CONFLUENCE

Laboratory Results Summary Table - Soil
A03 596

10/5/2022

Soil Screening and Remediation Limits				Soil Suitability for Reclamation				Metals (mg/kg [ppm])											
COGCC Table 915-1 Residential -->			NA	4	6	6-8.3	2	0.68	15000	71	NA	0.3	NA	3100	400	NA	1500	390	390	23000
Sample Date	Solid/Soil Source (Equipment) [Vault/Sump, Separator, Tank Battery, Dump Line, Pit, Cuttings, Background, etc.]	Sample ID	PID (ppm)	EC (Specific Conductance) (millimhos/centimeter) (by saturated paste method)	SAR (Sodium Adsorption Ratio) (calculation) (by saturated paste method)	pH (pH Units) (by saturated paste method)	Boron - Hot Water Soluble (mg/L)	Arsenic	Barium	Cadmium (mg/kg)	Chromium (III)	Chromium (VI)	Chromium (Total)	Copper	Lead	Mercury (Total Mercury by EPA 7471)	Nickel	Selenium	Silver	Zinc
8/31/2022	Flowline	20220831-A03_596_FL-STOCK_COMP	78.6	0.657	4.26	8.87	0.384	3.81	483	0.360	NA	<1.00	NA	13.8	15.6	NA	18.8	<2.00	<1.00	39.8
8/31/2022	Flowline	20220831-A03_596_FL-POR @ 4'	3516	1.710	8.01	7.73	0.668	2.92	566	<0.500	NA	<1.00	NA	11.6	12.1	NA	12.8	<2.00	<1.00	34.2
8/31/2022	Flowline	20220831-A03_596_FL-N_TRENCH @4'	7.4	0.170	8.17	7.73	0.536	5.54	394	0.523	NA	<1.00	NA	10.5	10.5	NA	20.1	<2.00	<1.00	32.0
8/31/2022	Flowline	20220831-A03_596_FL-SSW @ 3'	1098	2.180	16.5	8.28	1.02	3.45	667	<0.500	NA	<1.00	NA	14.7	16.4	NA	16.4	<2.00	<1.00	41.2
8/31/2022	Flowline	20220831-A03_596_FL-NESW @ 3'	79.9	0.702	5.67	8.08	0.555	3.62	725	<0.500	NA	<1.00	NA	16.1	15.6	NA	15.4	<2.00	<1.00	44.2
8/31/2022	Flowline	20220831-A03_596_FL-NWSW @ 3'	320.8	0.490	4.68	8.54	0.424	3.38	408	<0.500	NA	<1.00	NA	12.5	17.2	NA	14.1	<2.00	<1.00	43.6
7/28/2010	Background	A03-N. BACK-072810	NA	79	2.6	6.7	NA	8.8	270	0.54	49	<10	49	25	21	<0.020	26	<1.0	0.54	47

Confluence Compliance Companies, LLC
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Orange Fill = Exceedance
Dark Gray Italics = Below Reporting Detection Limit (RDL)
"NA" = Not Analyzed
mg/kg = milligrams per kilogram / parts per million

ANALYTICAL REPORT

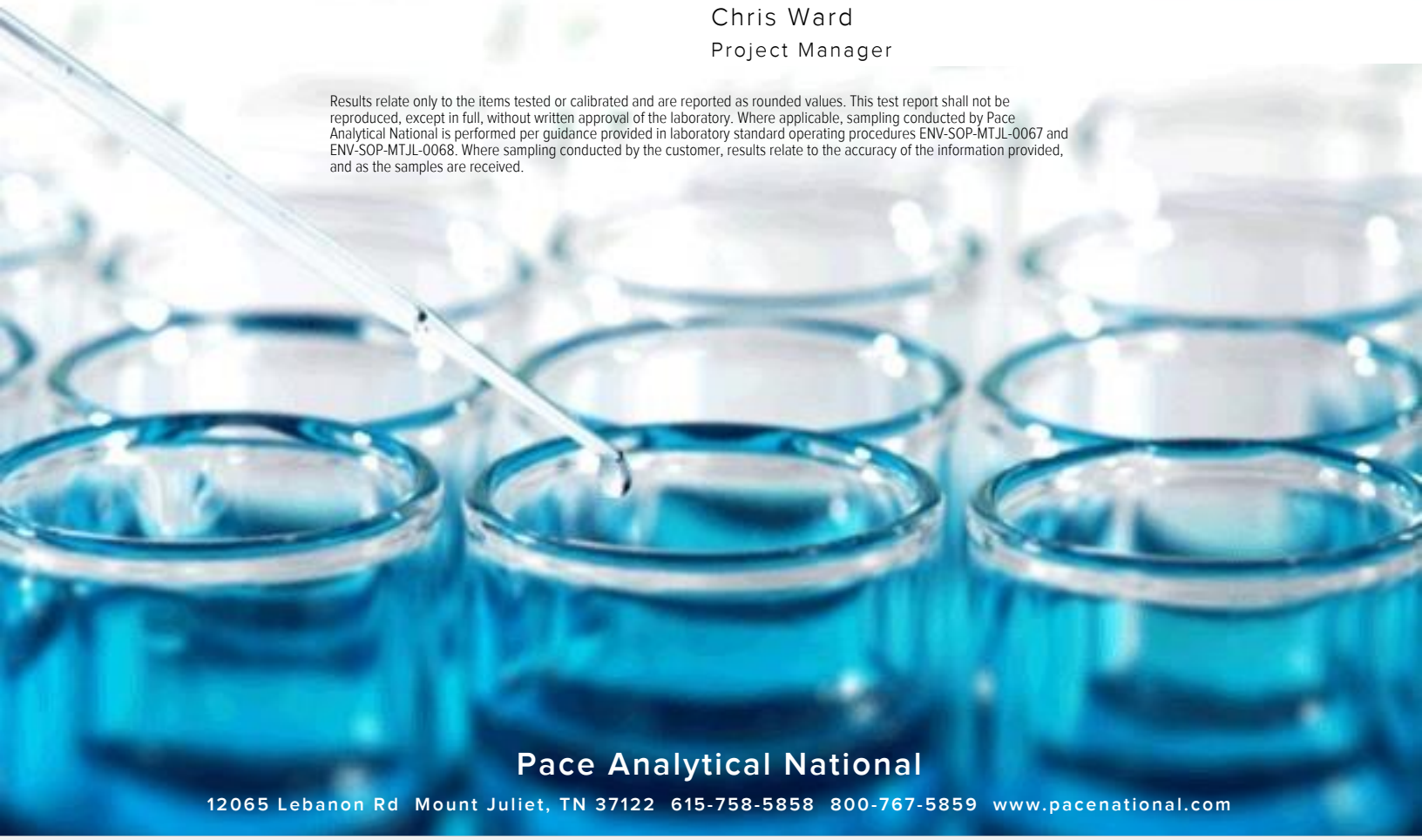
September 19, 2022

Caerus Oil and Gas

Sample Delivery Group:	L1532241
Samples Received:	09/02/2022
Project Number:	
Description:	A03 596 Flowline Release
Site:	A03 596
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

20220831-A03_596_FL-SSW @ 3' L1532241-01 Solid

Collected by: A Smith | Collected date/time: 08/31/22 13:45 | Received date/time: 09/02/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1924600	1	09/15/22 16:35	09/15/22 16:35	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1924000	1	09/10/22 22:05	09/13/22 20:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1925207	1	09/13/22 15:00	09/13/22 16:00	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1924190	1	09/14/22 10:17	09/16/22 14:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1923240	1	09/12/22 16:58	09/14/22 14:34	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1921387	2	09/05/22 15:36	09/14/22 00:27	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1923244	5	09/12/22 17:05	09/14/22 00:16	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1923539	100	09/04/22 13:16	09/10/22 01:40	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1923301	80	09/04/22 13:16	09/09/22 05:10	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	1	09/13/22 10:10	09/14/22 00:51	TJD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	100	09/13/22 10:10	09/14/22 10:46	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1924030	1	09/10/22 06:02	09/10/22 20:34	AMG	Mt. Juliet, TN

20220831-A03_596_FL-NESW @ 3' L1532241-02 Solid

Collected by: A Smith | Collected date/time: 08/31/22 13:50 | Received date/time: 09/02/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1924600	1	09/15/22 16:38	09/15/22 16:38	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1924000	1	09/10/22 22:05	09/13/22 20:50	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1925207	1	09/13/22 15:00	09/13/22 16:00	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1924190	1	09/14/22 10:17	09/16/22 14:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1923240	1	09/12/22 16:58	09/14/22 14:37	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1921387	1	09/05/22 15:36	09/14/22 00:30	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1923244	5	09/12/22 17:05	09/14/22 00:19	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1921706	1	09/04/22 13:16	09/07/22 16:20	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1923301	1	09/04/22 13:16	09/08/22 23:08	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	1	09/13/22 10:10	09/14/22 00:38	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1924030	1	09/10/22 06:02	09/10/22 17:38	AMG	Mt. Juliet, TN

20220831-A03_596_FL-NWSW @ 3' L1532241-03 Solid

Collected by: A Smith | Collected date/time: 08/31/22 13:55 | Received date/time: 09/02/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1924600	1	09/15/22 16:40	09/15/22 16:40	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1924006	1	09/14/22 11:07	09/18/22 11:37	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1925207	1	09/13/22 15:00	09/13/22 16:00	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1924190	1	09/14/22 10:17	09/16/22 14:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1923240	1	09/12/22 16:58	09/14/22 14:39	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1921387	1	09/05/22 15:36	09/14/22 00:38	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1923244	5	09/12/22 17:05	09/14/22 00:23	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1921706	1	09/04/22 13:16	09/07/22 16:41	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1923301	1	09/04/22 13:16	09/08/22 23:27	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	1	09/13/22 10:10	09/14/22 01:05	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1924030	1	09/10/22 06:02	09/10/22 17:57	AMG	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
	SAR				
Sodium Adsorption Ratio	16.5		1	09/15/2022 16:35	WG1924600

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	09/13/2022 20:45	WG1924000

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	8.28	T8	1	09/13/2022 16:00	WG1925207

Sample Narrative:

L1532241-01 WG1925207: 8.28 at 20.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	2180		10.0	1	09/16/2022 14:10	WG1924190

Sample Narrative:

L1532241-01 WG1924190: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Barium	667		0.500	1	09/14/2022 14:34	WG1923240
Cadmium	ND		0.500	1	09/14/2022 14:34	WG1923240
Copper	14.7		2.00	1	09/14/2022 14:34	WG1923240
Lead	16.4		0.500	1	09/14/2022 14:34	WG1923240
Nickel	16.4		2.00	1	09/14/2022 14:34	WG1923240
Selenium	ND		2.00	1	09/14/2022 14:34	WG1923240
Silver	ND		1.00	1	09/14/2022 14:34	WG1923240
Zinc	41.2		5.00	1	09/14/2022 14:34	WG1923240

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	1.02		0.400	2	09/14/2022 00:27	WG1921387

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	3.45		1.00	5	09/14/2022 00:16	WG1923244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	520		10.0	100	09/10/2022 01:40	WG1923539
(S) a,a,a-Trifluorotoluene(FID)	*86.1*		*77.0-120*		*09/10/2022 01:40*	WG1923539

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.0800	80	09/09/2022 05:10	WG1923301
Toluene	ND		0.400	80	09/09/2022 05:10	WG1923301
Ethylbenzene	ND		0.200	80	09/09/2022 05:10	WG1923301
Xylenes, Total	9.76		0.520	80	09/09/2022 05:10	WG1923301
1,2,4-Trimethylbenzene	9.95		0.400	80	09/09/2022 05:10	WG1923301
1,3,5-Trimethylbenzene	10.2		0.400	80	09/09/2022 05:10	WG1923301
(S) Toluene-d8	*97.4*		*75.0-131*		*09/09/2022 05:10*	WG1923301
(S) 4-Bromofluorobenzene	*103*		*67.0-138*		*09/09/2022 05:10*	WG1923301
(S) 1,2-Dichloroethane-d4	*116*		*70.0-130*		*09/09/2022 05:10*	WG1923301

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5540		400	100	09/14/2022 10:46	WG1925133
C28-C36 Motor Oil Range	84.7		4.00	1	09/14/2022 00:51	WG1925133
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*09/14/2022 10:46*	WG1925133
(S) o-Terphenyl	*0.000*	J2	*18.0-148*		*09/14/2022 00:51*	WG1925133

Sample Narrative:

L1532241-01 WG1925133: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0810		0.00600	1	09/10/2022 20:34	WG1924030
Anthracene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Benzo(a)anthracene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Benzo(b)fluoranthene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Benzo(k)fluoranthene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Benzo(a)pyrene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Chrysene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Dibenz(a,h)anthracene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Fluoranthene	ND		0.00600	1	09/10/2022 20:34	WG1924030
Fluorene	0.362		0.00600	1	09/10/2022 20:34	WG1924030
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/10/2022 20:34	WG1924030
1-Methylnaphthalene	0.870		0.0200	1	09/10/2022 20:34	WG1924030
2-Methylnaphthalene	1.64		0.0200	1	09/10/2022 20:34	WG1924030
Naphthalene	0.236		0.0200	1	09/10/2022 20:34	WG1924030
Pyrene	0.00692		0.00600	1	09/10/2022 20:34	WG1924030
(S) p-Terphenyl-d14	*55.3*		*23.0-120*		*09/10/2022 20:34*	WG1924030
(S) Nitrobenzene-d5	*3220*	J1	*14.0-149*		*09/10/2022 20:34*	WG1924030
(S) 2-Fluorobiphenyl	*86.2*		*34.0-125*		*09/10/2022 20:34*	WG1924030

Sample Narrative:

L1532241-01 WG1924030: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.67		1	09/15/2022 16:38	WG1924600

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/13/2022 20:50	WG1924000

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.08	T8	1	09/13/2022 16:00	WG1925207

Sample Narrative:
L1532241-02 WG1925207: 8.08 at 20.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	702		10.0	1	09/16/2022 14:10	WG1924190

Sample Narrative:
L1532241-02 WG1924190: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	725		0.500	1	09/14/2022 14:37	WG1923240
Cadmium	ND		0.500	1	09/14/2022 14:37	WG1923240
Copper	16.1		2.00	1	09/14/2022 14:37	WG1923240
Lead	15.6		0.500	1	09/14/2022 14:37	WG1923240
Nickel	15.4		2.00	1	09/14/2022 14:37	WG1923240
Selenium	ND		2.00	1	09/14/2022 14:37	WG1923240
Silver	ND		1.00	1	09/14/2022 14:37	WG1923240
Zinc	44.2		5.00	1	09/14/2022 14:37	WG1923240

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.555		0.200	1	09/14/2022 00:30	WG1921387

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.62		1.00	5	09/14/2022 00:19	WG1923244

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.30		0.100	1	09/07/2022 16:20	WG1921706
(S) a,a,a-Trifluorotoluene(FID)	*89.1*		*77.0-120*		*09/07/2022 16:20*	WG1921706

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	09/08/2022 23:08	WG1923301
Toluene	ND		0.00500	1	09/08/2022 23:08	WG1923301
Ethylbenzene	ND		0.00250	1	09/08/2022 23:08	WG1923301
Xylenes, Total	0.165		0.00650	1	09/08/2022 23:08	WG1923301
1,2,4-Trimethylbenzene	0.0898		0.00500	1	09/08/2022 23:08	WG1923301
1,3,5-Trimethylbenzene	0.104		0.00500	1	09/08/2022 23:08	WG1923301
(S) Toluene-d8	*96.6*		*75.0-131*		*09/08/2022 23:08*	WG1923301
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*09/08/2022 23:08*	WG1923301
(S) 1,2-Dichloroethane-d4	*107*		*70.0-130*		*09/08/2022 23:08*	WG1923301

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	62.2		4.00	1	09/14/2022 00:38	WG1925133
C28-C36 Motor Oil Range	86.5		4.00	1	09/14/2022 00:38	WG1925133
(S) o-Terphenyl	*49.8*		*18.0-148*		*09/14/2022 00:38*	WG1925133

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Anthracene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Benzo(a)anthracene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Benzo(b)fluoranthene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Benzo(k)fluoranthene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Benzo(a)pyrene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Chrysene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Dibenz(a,h)anthracene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Fluoranthene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Fluorene	ND		0.00600	1	09/10/2022 17:38	WG1924030
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/10/2022 17:38	WG1924030
1-Methylnaphthalene	ND		0.0200	1	09/10/2022 17:38	WG1924030
2-Methylnaphthalene	ND		0.0200	1	09/10/2022 17:38	WG1924030
Naphthalene	ND		0.0200	1	09/10/2022 17:38	WG1924030
Pyrene	ND		0.00600	1	09/10/2022 17:38	WG1924030
(S) p-Terphenyl-d14	*53.0*		*23.0-120*		*09/10/2022 17:38*	WG1924030
(S) Nitrobenzene-d5	*55.6*		*14.0-149*		*09/10/2022 17:38*	WG1924030
(S) 2-Fluorobiphenyl	*54.4*		*34.0-125*		*09/10/2022 17:38*	WG1924030

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	4.68		1	09/15/2022 16:40	WG1924600

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	09/18/2022 11:37	WG1924006

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	8.54	T8	1	09/13/2022 16:00	WG1925207

Sample Narrative:

L1532241-03 WG1925207: 8.54 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	490		10.0	1	09/16/2022 14:10	WG1924190

Sample Narrative:

L1532241-03 WG1924190: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Barium	408		0.500	1	09/14/2022 14:39	WG1923240
Cadmium	ND		0.500	1	09/14/2022 14:39	WG1923240
Copper	12.5		2.00	1	09/14/2022 14:39	WG1923240
Lead	17.2		0.500	1	09/14/2022 14:39	WG1923240
Nickel	14.1		2.00	1	09/14/2022 14:39	WG1923240
Selenium	ND		2.00	1	09/14/2022 14:39	WG1923240
Silver	ND		1.00	1	09/14/2022 14:39	WG1923240
Zinc	43.6		5.00	1	09/14/2022 14:39	WG1923240

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	0.424		0.200	1	09/14/2022 00:38	WG1921387

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	3.38		1.00	5	09/14/2022 00:23	WG1923244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	1.41		0.100	1	09/07/2022 16:41	WG1921706
(S) a,a,a-Trifluorotoluene(FID)	*88.2*		*77.0-120*		*09/07/2022 16:41*	WG1921706

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	09/08/2022 23:27	WG1923301
Toluene	ND		0.00500	1	09/08/2022 23:27	WG1923301
Ethylbenzene	ND		0.00250	1	09/08/2022 23:27	WG1923301
Xylenes, Total	0.0132		0.00650	1	09/08/2022 23:27	WG1923301
1,2,4-Trimethylbenzene	ND		0.00500	1	09/08/2022 23:27	WG1923301
1,3,5-Trimethylbenzene	0.132		0.00500	1	09/08/2022 23:27	WG1923301
(S) Toluene-d8	*94.3*		*75.0-131*		*09/08/2022 23:27*	WG1923301
(S) 4-Bromofluorobenzene	*113*		*67.0-138*		*09/08/2022 23:27*	WG1923301
(S) 1,2-Dichloroethane-d4	*116*		*70.0-130*		*09/08/2022 23:27*	WG1923301

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	91.1		4.00	1	09/14/2022 01:05	WG1925133
C28-C36 Motor Oil Range	97.6		4.00	1	09/14/2022 01:05	WG1925133
(S) o-Terphenyl	*57.2*		*18.0-148*		*09/14/2022 01:05*	WG1925133

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Anthracene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Benzo(a)anthracene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Benzo(b)fluoranthene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Benzo(k)fluoranthene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Benzo(a)pyrene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Chrysene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Dibenz(a,h)anthracene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Fluoranthene	ND		0.00600	1	09/10/2022 17:57	WG1924030
Fluorene	0.0104		0.00600	1	09/10/2022 17:57	WG1924030
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/10/2022 17:57	WG1924030
1-Methylnaphthalene	0.0809		0.0200	1	09/10/2022 17:57	WG1924030
2-Methylnaphthalene	0.103		0.0200	1	09/10/2022 17:57	WG1924030
Naphthalene	0.0450		0.0200	1	09/10/2022 17:57	WG1924030
Pyrene	ND		0.00600	1	09/10/2022 17:57	WG1924030
(S) p-Terphenyl-d14	*53.5*		*23.0-120*		*09/10/2022 17:57*	WG1924030
(S) Nitrobenzene-d5	*53.9*		*14.0-149*		*09/10/2022 17:57*	WG1924030
(S) 2-Fluorobiphenyl	*54.5*		*34.0-125*		*09/10/2022 17:57*	WG1924030

Method Blank (MB)

(MB) R3837202-1 09/13/22 18:09

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

L1532232-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-03 09/13/22 19:11 • (DUP) R3837202-11 09/13/22 19:16

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

L1532232-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-10 09/13/22 19:53 • (DUP) R3837202-12 09/13/22 19:58

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

Laboratory Control Sample (LCS)

(LCS) R3837202-2 09/13/22 18:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1532219-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-7 09/13/22 18:30 • (MSD) R3837202-8 09/13/22 18:35

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 %
Hexavalent Chromium	20.0	ND	12.7	14.3	63.4	71.6	1	75.0-125	J6	J6	12.1	20

Sample Narrative:

OS: Sample is a reducer.

L1532219-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-10 09/13/22 18:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	636	ND	368	57.9	50	75.0-125	J6

Sample Narrative:

OS: Sample is a reducer.

Method Blank (MB)

(MB) R3838482-1 09/18/22 11:23

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

L1532270-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532270-02 09/18/22 11:50 • (DUP) R3838482-3 09/18/22 11:55

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

L1533056-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1533056-01 09/18/22 12:47 • (DUP) R3838482-4 09/18/22 12:52

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

Laboratory Control Sample (LCS)

(LCS) R3838482-2 09/18/22 11:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.84	98.4	80.0-120	

L1533063-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1533063-01 09/18/22 13:17 • (MS) R3838482-5 09/18/22 13:23 • (MSD) R3838482-6 09/18/22 13:38

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 %
Hexavalent Chromium	20.0	ND	17.2	15.7	85.8	78.5	1	75.0-125			8.86	20

L1533063-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1533063-01 09/18/22 13:17 • (MS) R3838482-8 09/18/22 13:49

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	633	ND	512	80.8	50	75.0-125	

L1532241-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-02 09/13/22 16:00 • (DUP) R3836727-2 09/13/22 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.08	8.14	1	0.740		1

Sample Narrative:

OS: 8.08 at 20.8C

DUP: 8.14 at 20.3C

L1532263-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532263-02 09/13/22 16:00 • (DUP) R3836727-3 09/13/22 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.14	8.09	1	0.616		1

Sample Narrative:

OS: 8.14 at 20.7C

DUP: 8.09 at 20.8C

Laboratory Control Sample (LCS)

(LCS) R3836727-1 09/13/22 16:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 19.4C

Method Blank (MB)

(MB) R3838102-1 09/16/22 14:10

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

L1532241-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-03 09/16/22 14:10 • (DUP) R3838102-3 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	490	488	1	0.409		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1532610-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1532610-01 09/16/22 14:10 • (DUP) R3838102-4 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	151	152	1	0.662		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3838102-2 09/16/22 14:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1150	102	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3837336-1 09/14/22 13:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		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

Laboratory Control Sample (LCS)

(LCS) R3837336-2 09/14/22 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	96.8	96.8	80.0-120	
Cadmium	100	91.7	91.7	80.0-120	
Copper	100	93.4	93.4	80.0-120	
Lead	100	90.2	90.2	80.0-120	
Nickel	100	91.2	91.2	80.0-120	
Selenium	100	90.9	90.9	80.0-120	
Silver	20.0	17.4	86.9	80.0-120	
Zinc	100	89.5	89.5	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/14/22 14:03 • (MS) R3837336-5 09/14/22 14:14 • (MSD) R3837336-6 09/14/22 14:17

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	436	629	505	193	69.2	1	75.0-125	V	J3 V	21.9	20
Cadmium	100	ND	96.2	94.5	95.9	94.2	1	75.0-125			1.77	20
Copper	100	13.6	114	109	100	95.9	1	75.0-125			4.07	20
Lead	100	14.1	114	109	99.5	94.9	1	75.0-125			4.07	20
Nickel	100	24.9	127	120	102	95.5	1	75.0-125			4.97	20
Selenium	100	ND	94.5	89.8	94.5	89.8	1	75.0-125			5.04	20
Silver	20.0	ND	18.3	17.9	91.4	89.5	1	75.0-125			2.15	20
Zinc	100	47.8	135	125	87.2	77.2	1	75.0-125			7.68	20

QUALITY CONTROL SUMMARY

L1532241-01,02,03

Method Blank (MB)

(MB) R3836834-1 09/14/22 00:04

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) R3836834-2 09/14/22 00:07 • (LCSD) R3836834-3 09/14/22 00:10

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	1.07	1.04	107	104	80.0-120			2.98	20

Method Blank (MB)

(MB) R3836787-1 09/13/22 23:35

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) R3836787-2 09/13/22 23:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	84.2	84.2	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/13/22 23:43 • (MS) R3836787-5 09/13/22 23:53 • (MSD) R3836787-6 09/13/22 23:56

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	5.77	87.4	87.5	81.7	81.7	5	75.0-125			0.0769	20

Method Blank (MB)

(MB) R3834752-2 09/07/22 09:32

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)	*95.6*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3834752-1 09/07/22 08:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.84	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*77.0-120*	

Method Blank (MB)

(MB) R3836240-2 09/09/22 20:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	*91.1*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3836240-1 09/09/22 19:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.73	104	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*108*	*77.0-120*	

L1532136-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532136-01 09/10/22 00:18 • (MS) R3836240-3 09/10/22 04:24 • (MSD) R3836240-4 09/10/22 04:44

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) Low Fraction	132	46.8	135	129	90.1	84.0	25	10.0-151			4.55	28
(S) a,a,a-Trifluorotoluene(FID)					*115*	*113*		*77.0-120*				

Method Blank (MB)

(MB) R3836958-3 09/08/22 22:49

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	*99.9*			*75.0-131*
(S) 4-Bromofluorobenzene	*102*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*

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

(LCS) R3836958-1 09/08/22 21:33 • (LCSD) R3836958-2 09/08/22 21:53

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	0.121	0.120	96.8	96.0	70.0-123			0.830	20
Toluene	0.125	0.115	0.109	92.0	87.2	75.0-121			5.36	20
Ethylbenzene	0.125	0.118	0.116	94.4	92.8	74.0-126			1.71	20
Xylenes, Total	0.375	0.346	0.350	92.3	93.3	72.0-127			1.15	20
1,2,4-Trimethylbenzene	0.125	0.114	0.109	91.2	87.2	70.0-126			4.48	20
1,3,5-Trimethylbenzene	0.125	0.114	0.104	91.2	83.2	73.0-127			9.17	20
(S) Toluene-d8				*97.9*	*93.4*	*75.0-131*				
(S) 4-Bromofluorobenzene				*99.9*	*109*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*119*	*121*	*70.0-130*				

Method Blank (MB)

(MB) R3836901-1 09/13/22 21:09

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	*68.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3836901-2 09/13/22 21:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	38.6	77.2	50.0-150	
(S) o-Terphenyl			*94.4*	*18.0-148*	

L1532236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532236-01 09/14/22 01:44 • (MS) R3836901-3 09/14/22 01:57 • (MSD) R3836901-4 09/14/22 02:10

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	5380	4530	3990	0.000	0.000	5	50.0-150	E V	E V	12.7	20
(S) o-Terphenyl					*0.000*	*0.000*		*18.0-148*	J2	J2		

Sample Narrative:

OS: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3836089-2 09/10/22 17:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	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
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	*68.6*			*23.0-120*
(S) Nitrobenzene-d5	*53.6*			*14.0-149*
(S) 2-Fluorobiphenyl	*66.9*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3836089-1 09/10/22 16:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0630	78.8	50.0-120	
Anthracene	0.0800	0.0640	80.0	50.0-126	
Benzo(a)anthracene	0.0800	0.0649	81.1	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0655	81.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0618	77.3	49.0-125	
Benzo(a)pyrene	0.0800	0.0658	82.3	42.0-120	
Chrysene	0.0800	0.0667	83.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0607	75.9	47.0-125	
Fluoranthene	0.0800	0.0663	82.9	49.0-129	
Fluorene	0.0800	0.0634	79.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0626	78.3	46.0-125	
1-Methylnaphthalene	0.0800	0.0630	78.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0631	78.9	50.0-120	
Naphthalene	0.0800	0.0589	73.6	50.0-120	
Pyrene	0.0800	0.0677	84.6	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3836089-1 09/10/22 16:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*72.1*	*23.0-120*	
(S) Nitrobenzene-d5			*72.9*	*14.0-149*	
(S) 2-Fluorobiphenyl			*74.9*	*34.0-125*	

L1532192-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532192-06 09/10/22 22:12 • (MS) R3836089-3 09/10/22 22:32 • (MSD) R3836089-4 09/10/22 22:52

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 %
Acenaphthene	0.0776	ND	0.0605	0.0607	78.0	77.4	1	14.0-127			0.330	27
Anthracene	0.0776	0.0242	0.138	0.310	147	365	1	10.0-145	J5	J3 J5	76.8	30
Benzo(a)anthracene	0.0776	0.181	0.420	1.09	308	1160	1	10.0-139	J5	J3 J5	88.7	30
Benzo(b)fluoranthene	0.0776	0.320	0.617	0.957	383	813	1	10.0-140	V	J3 V	43.2	36
Benzo(k)fluoranthene	0.0776	0.122	0.266	0.410	186	367	1	10.0-137	J5	J3 J5	42.6	31
Benzo(a)pyrene	0.0776	0.235	0.479	0.854	314	790	1	10.0-141	J5	J3 J5	56.3	31
Chrysene	0.0776	0.197	0.526	1.01	424	1040	1	10.0-145	J5	J3 J5	63.0	30
Dibenz(a,h)anthracene	0.0776	0.0330	0.0990	0.136	85.1	131	1	10.0-132		J3	31.5	31
Fluoranthene	0.0776	0.345	1.07	2.10	934	2240	1	10.0-153	V	J3 V	65.0	33
Fluorene	0.0776	ND	0.0865	0.0870	111	111	1	11.0-130			0.576	29
Indeno(1,2,3-cd)pyrene	0.0776	0.205	0.386	0.499	233	375	1	10.0-137	J5	J5	25.5	32
1-Methylnaphthalene	0.0776	0.0232	0.127	0.0627	134	50.4	1	10.0-142		J3	67.8	28
2-Methylnaphthalene	0.0776	0.0331	0.144	0.0653	143	41.1	1	10.0-137	J5	J3	75.2	28
Naphthalene	0.0776	0.0284	0.114	0.0723	110	56.0	1	10.0-135		J3	44.8	27
Pyrene	0.0776	0.302	0.855	1.76	713	1860	1	10.0-148	J5	J3 J5	69.2	35
(S) p-Terphenyl-d14					*52.2*	*51.3*		*23.0-120*				
(S) Nitrobenzene-d5					*53.6*	*56.9*		*14.0-149*				
(S) 2-Fluorobiphenyl					*60.7*	*59.6*		*34.0-125*				

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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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.

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf
Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here: B048

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC	Billing Information: Info on file
Address: Info on file	
Report To: Jake Janicek, Brett Middleton, Blair Rollins	Email To: info on file
Copy To: Chris McKisson, remediation@confluence-cc.com	Site Collection Info/Address:
Customer Project Name/Number: A03 596 Flowline Release	State: CO / County/City: Garfield / Time Zone Collected: [ ]PT [X]MT [ ]CT [ ]ET
Phone: / Email:	Site/Facility ID #: A03 596 / Compliance Monitoring? [ ] Yes [X] No
Collected By (print): Andrew Smith	Purchase Order # : / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (signature): A Smith	Turnaround Date Required: Standard Turnaround / Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: ____ [ ] Hold: ____	Rush: (Expedite Charges Apply) [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day / Field Filtered (if applicable): [ ] Yes [ ] No / Analysis: ____

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other ____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	Analyses: Table 915-1 VOCs	TPH (ORO, GRO, DRO)	Table 915-1 Metal's	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	
20220831-A03_596_FL-SSW@3'	SL	G	8/31/2022	1345				3	G/P	X	X	X	X	X	X	
20220831-A03_596_FL-NESW@3'	SL	G	8/31/2022	1350				3	G/P	X	X	X	X	X	X	
20220831-A03_596_FL-NWSW@3'	SL	G	8/31/2022	1355				3	G/P	X	X	X	X	X	X	

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: ____			
Sample pH Acceptable	Y	N	NA
pH Strips: ____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: ____			

LAB USE ONLY:
Lab Sample # / Comments: L1532241

-01
-02
-03

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #:

Samples received via: FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: ____
Cooler 1 Temp Upon Receipt: ___oC
Cooler 1 Therm Corr. Factor: ___oC
Cooler 1 Corrected Temp: ___oC
Comments:

Relinquished by/Company: (Signature) A Smith	Date/Time: 9/1/22 1215	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time: 9/1/22 1500	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature) M. Wilson	Date/Time: 9/2/22 900

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

TRK# 5755 8005 0190

ANALYTICAL REPORT

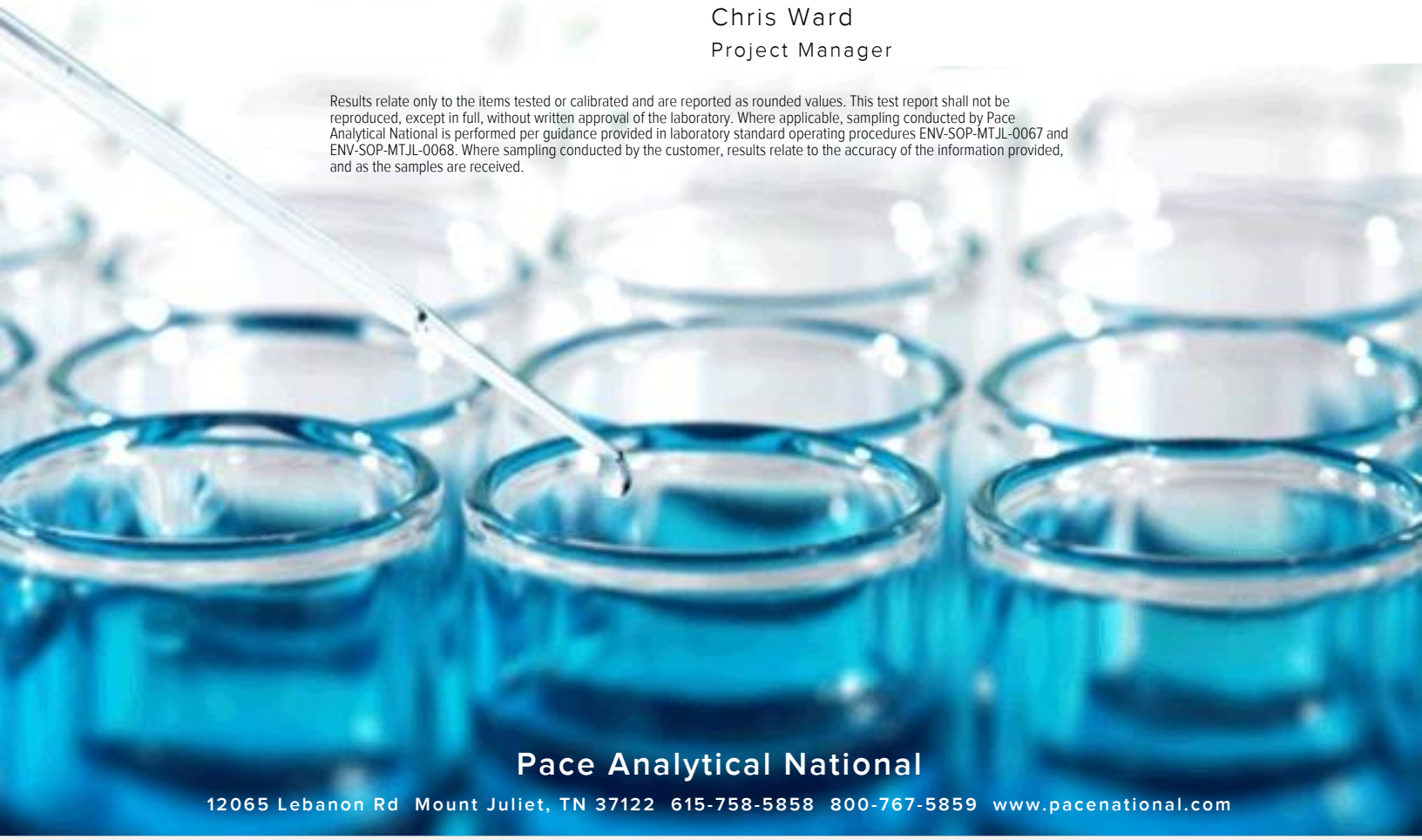
September 16, 2022

Caerus Oil and Gas

Sample Delivery Group:	L1532239
Samples Received:	09/02/2022
Project Number:	
Description:	A03 596 Flowline Release
Site:	A03 596
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20220831-A03_596_FL-N_TRENCH @4' L1532239-01 Solid

Collected by: A Smith
Collected date/time: 08/31/22 13:35
Received date/time: 09/02/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1924600	1	09/15/22 16:32	09/15/22 16:32	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1924000	1	09/10/22 22:05	09/13/22 20:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1925207	1	09/13/22 15:00	09/13/22 16:00	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1924190	1	09/14/22 10:17	09/16/22 14:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1923240	1	09/12/22 16:58	09/14/22 14:26	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1921387	1	09/05/22 15:36	09/14/22 00:24	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1923244	5	09/12/22 17:05	09/14/22 00:06	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1921706	1	09/04/22 13:16	09/07/22 16:00	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1923252	1	09/04/22 13:16	09/08/22 20:18	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	20	09/13/22 10:10	09/14/22 02:36	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1924032	1	09/10/22 06:15	09/10/22 20:41	AMG	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
	SAR				
Sodium Adsorption Ratio	8.17		1	09/15/2022 16:32	WG1924600

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	09/13/2022 20:39	WG1924000

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	7.73	T8	1	09/13/2022 16:00	WG1925207

Sample Narrative:

L1532239-01 WG1925207: 7.73 at 20.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	170		10.0	1	09/16/2022 14:10	WG1924190

Sample Narrative:

L1532239-01 WG1924190: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Barium	394		0.500	1	09/14/2022 14:26	WG1923240
Cadmium	0.523		0.500	1	09/14/2022 14:26	WG1923240
Copper	10.5		2.00	1	09/14/2022 14:26	WG1923240
Lead	10.5		0.500	1	09/14/2022 14:26	WG1923240
Nickel	20.1		2.00	1	09/14/2022 14:26	WG1923240
Selenium	ND		2.00	1	09/14/2022 14:26	WG1923240
Silver	ND		1.00	1	09/14/2022 14:26	WG1923240
Zinc	32.0		5.00	1	09/14/2022 14:26	WG1923240

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	0.536		0.200	1	09/14/2022 00:24	WG1921387

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	5.54		1.00	5	09/14/2022 00:06	WG1923244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	0.123		0.100	1	09/07/2022 16:00	WG1921706
(S) a,a,a-Trifluorotoluene(FID)	*91.5*		*77.0-120*		*09/07/2022 16:00*	WG1921706

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	09/08/2022 20:18	WG1923252
Toluene	ND		0.00500	1	09/08/2022 20:18	WG1923252
Ethylbenzene	ND		0.00250	1	09/08/2022 20:18	WG1923252
Xylenes, Total	ND		0.00650	1	09/08/2022 20:18	WG1923252
1,2,4-Trimethylbenzene	ND		0.00500	1	09/08/2022 20:18	WG1923252
1,3,5-Trimethylbenzene	0.0144		0.00500	1	09/08/2022 20:18	WG1923252
(S) Toluene-d8	*97.1*		*75.0-131*		*09/08/2022 20:18*	WG1923252
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*09/08/2022 20:18*	WG1923252
(S) 1,2-Dichloroethane-d4	*107*		*70.0-130*		*09/08/2022 20:18*	WG1923252

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5130		80.0	20	09/14/2022 02:36	WG1925133
C28-C36 Motor Oil Range	ND		80.0	20	09/14/2022 02:36	WG1925133
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*09/14/2022 02:36*	WG1925133

Sample Narrative:

L1532239-01 WG1925133: Dilution due to matrix.

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Anthracene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Benzo(a)anthracene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Benzo(b)fluoranthene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Benzo(k)fluoranthene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Benzo(a)pyrene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Chrysene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Dibenz(a,h)anthracene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Fluoranthene	ND		0.00600	1	09/10/2022 20:41	WG1924032
Fluorene	0.280		0.00600	1	09/10/2022 20:41	WG1924032
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/10/2022 20:41	WG1924032
1-Methylnaphthalene	1.27		0.0200	1	09/10/2022 20:41	WG1924032
2-Methylnaphthalene	2.54		0.0200	1	09/10/2022 20:41	WG1924032
Naphthalene	0.600		0.0200	1	09/10/2022 20:41	WG1924032
Pyrene	ND		0.00600	1	09/10/2022 20:41	WG1924032
(S) p-Terphenyl-d14	*80.7*		*23.0-120*		*09/10/2022 20:41*	WG1924032
(S) Nitrobenzene-d5	*2120*	J1	*14.0-149*		*09/10/2022 20:41*	WG1924032
(S) 2-Fluorobiphenyl	*96.1*		*34.0-125*		*09/10/2022 20:41*	WG1924032

Sample Narrative:

L1532239-01 WG1924032: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3837202-1 09/13/22 18:09

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

L1532232-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-03 09/13/22 19:11 • (DUP) R3837202-11 09/13/22 19:16

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

L1532232-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-10 09/13/22 19:53 • (DUP) R3837202-12 09/13/22 19:58

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

Laboratory Control Sample (LCS)

(LCS) R3837202-2 09/13/22 18:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1532219-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-7 09/13/22 18:30 • (MSD) R3837202-8 09/13/22 18:35

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 %
Hexavalent Chromium	20.0	ND	12.7	14.3	63.4	71.6	1	75.0-125	J6	J6	12.1	20

Sample Narrative:

OS: Sample is a reducer.

L1532219-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-10 09/13/22 18:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	636	ND	368	57.9	50	75.0-125	J6

Sample Narrative:

OS: Sample is a reducer.

L1532241-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-02 09/13/22 16:00 • (DUP) R3836727-2 09/13/22 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.08	8.14	1	0.740		1

Sample Narrative:

OS: 8.08 at 20.8C

DUP: 8.14 at 20.3C

L1532263-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532263-02 09/13/22 16:00 • (DUP) R3836727-3 09/13/22 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.14	8.09	1	0.616		1

Sample Narrative:

OS: 8.14 at 20.7C

DUP: 8.09 at 20.8C

Laboratory Control Sample (LCS)

(LCS) R3836727-1 09/13/22 16:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 19.4C

Method Blank (MB)

(MB) R3838102-1 09/16/22 14:10

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

L1532241-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-03 09/16/22 14:10 • (DUP) R3838102-3 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	490	488	1	0.409		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1532610-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1532610-01 09/16/22 14:10 • (DUP) R3838102-4 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	151	152	1	0.662		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3838102-2 09/16/22 14:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1150	102	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3837336-1 09/14/22 13:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		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

Laboratory Control Sample (LCS)

(LCS) R3837336-2 09/14/22 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	96.8	96.8	80.0-120	
Cadmium	100	91.7	91.7	80.0-120	
Copper	100	93.4	93.4	80.0-120	
Lead	100	90.2	90.2	80.0-120	
Nickel	100	91.2	91.2	80.0-120	
Selenium	100	90.9	90.9	80.0-120	
Silver	20.0	17.4	86.9	80.0-120	
Zinc	100	89.5	89.5	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/14/22 14:03 • (MS) R3837336-5 09/14/22 14:14 • (MSD) R3837336-6 09/14/22 14:17

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	436	629	505	193	69.2	1	75.0-125	V	J3 V	21.9	20
Cadmium	100	ND	96.2	94.5	95.9	94.2	1	75.0-125			1.77	20
Copper	100	13.6	114	109	100	95.9	1	75.0-125			4.07	20
Lead	100	14.1	114	109	99.5	94.9	1	75.0-125			4.07	20
Nickel	100	24.9	127	120	102	95.5	1	75.0-125			4.97	20
Selenium	100	ND	94.5	89.8	94.5	89.8	1	75.0-125			5.04	20
Silver	20.0	ND	18.3	17.9	91.4	89.5	1	75.0-125			2.15	20
Zinc	100	47.8	135	125	87.2	77.2	1	75.0-125			7.68	20

Method Blank (MB)

(MB) R3836834-1 09/14/22 00:04

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) R3836834-2 09/14/22 00:07 • (LCSD) R3836834-3 09/14/22 00:10

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	1.07	1.04	107	104	80.0-120			2.98	20

Method Blank (MB)

(MB) R3836787-1 09/13/22 23:35

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) R3836787-2 09/13/22 23:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	84.2	84.2	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/13/22 23:43 • (MS) R3836787-5 09/13/22 23:53 • (MSD) R3836787-6 09/13/22 23:56

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	5.77	87.4	87.5	81.7	81.7	5	75.0-125			0.0769	20

Method Blank (MB)

(MB) R3834752-2 09/07/22 09:32

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)	*95.6*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3834752-1 09/07/22 08:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.84	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*77.0-120*	

Method Blank (MB)

(MB) R3835373-3 09/08/22 13:12

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	*95.4*			*75.0-131*
(S) 4-Bromofluorobenzene	*107*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*113*			*70.0-130*

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

(LCS) R3835373-1 09/08/22 11:01 • (LCSD) R3835373-2 09/08/22 11:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.117	0.123	93.6	98.4	70.0-123			5.00	20
Toluene	0.125	0.107	0.115	85.6	92.0	75.0-121			7.21	20
Ethylbenzene	0.125	0.111	0.124	88.8	99.2	74.0-126			11.1	20
Xylenes, Total	0.375	0.321	0.369	85.6	98.4	72.0-127			13.9	20
1,2,4-Trimethylbenzene	0.125	0.107	0.109	85.6	87.2	70.0-126			1.85	20
1,3,5-Trimethylbenzene	0.125	0.109	0.104	87.2	83.2	73.0-127			4.69	20
(S) Toluene-d8				*99.9*	*94.8*	*75.0-131*				
(S) 4-Bromofluorobenzene				*99.0*	*108*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*115*	*117*	*70.0-130*				

Method Blank (MB)

(MB) R3836901-1 09/13/22 21:09

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	*68.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3836901-2 09/13/22 21:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	38.6	77.2	50.0-150	
(S) o-Terphenyl			*94.4*	*18.0-148*	

L1532236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532236-01 09/14/22 01:44 • (MS) R3836901-3 09/14/22 01:57 • (MSD) R3836901-4 09/14/22 02:10

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	5380	4530	3990	0.000	0.000	5	50.0-150	E V	E V	12.7	20
(S) o-Terphenyl					*0.000*	*0.000*		*18.0-148*	J2	J2		

Sample Narrative:

OS: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3836023-2 09/10/22 16:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	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
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	*68.9*			*23.0-120*
(S) Nitrobenzene-d5	*47.8*			*14.0-149*
(S) 2-Fluorobiphenyl	*57.2*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3836023-1 09/10/22 16:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0525	65.6	50.0-120	
Anthracene	0.0800	0.0530	66.3	50.0-126	
Benzo(a)anthracene	0.0800	0.0551	68.9	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0614	76.8	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0590	73.8	49.0-125	
Benzo(a)pyrene	0.0800	0.0531	66.4	42.0-120	
Chrysene	0.0800	0.0596	74.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0553	69.1	47.0-125	
Fluoranthene	0.0800	0.0560	70.0	49.0-129	
Fluorene	0.0800	0.0561	70.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0542	67.8	46.0-125	
1-Methylnaphthalene	0.0800	0.0513	64.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0481	60.1	50.0-120	
Naphthalene	0.0800	0.0483	60.4	50.0-120	
Pyrene	0.0800	0.0575	71.9	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3836023-1 09/10/22 16:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*79.4*	*23.0-120*	
(S) Nitrobenzene-d5			*60.7*	*14.0-149*	
(S) 2-Fluorobiphenyl			*69.8*	*34.0-125*	

L1532445-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532445-01 09/10/22 17:13 • (MS) R3836023-3 09/10/22 17:30 • (MSD) R3836023-4 09/10/22 17:47

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 %
Acenaphthene	0.0800	ND	0.0538	0.0559	67.3	69.9	1	14.0-127			3.83	27
Anthracene	0.0800	ND	0.0547	0.0576	68.4	72.0	1	10.0-145			5.16	30
Benzo(a)anthracene	0.0800	ND	0.0589	0.0601	73.6	75.1	1	10.0-139			2.02	30
Benzo(b)fluoranthene	0.0800	ND	0.0618	0.0644	77.3	80.5	1	10.0-140			4.12	36
Benzo(k)fluoranthene	0.0800	ND	0.0619	0.0623	77.4	77.9	1	10.0-137			0.644	31
Benzo(a)pyrene	0.0800	ND	0.0594	0.0602	74.3	75.3	1	10.0-141			1.34	31
Chrysene	0.0800	ND	0.0616	0.0626	77.0	78.3	1	10.0-145			1.61	30
Dibenz(a,h)anthracene	0.0800	ND	0.0583	0.0587	72.9	73.4	1	10.0-132			0.684	31
Fluoranthene	0.0800	ND	0.0583	0.0608	72.9	76.0	1	10.0-153			4.20	33
Fluorene	0.0800	ND	0.0583	0.0590	72.9	73.8	1	11.0-130			1.19	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0567	0.0580	70.9	72.5	1	10.0-137			2.27	32
1-Methylnaphthalene	0.0800	ND	0.0529	0.0555	66.1	69.4	1	10.0-142			4.80	28
2-Methylnaphthalene	0.0800	ND	0.0499	0.0523	62.4	65.4	1	10.0-137			4.70	28
Naphthalene	0.0800	ND	0.0501	0.0532	62.6	66.5	1	10.0-135			6.00	27
Pyrene	0.0800	ND	0.0601	0.0616	75.1	77.0	1	10.0-148			2.47	35
(S) p-Terphenyl-d14					*80.9*	*81.7*		*23.0-120*				
(S) Nitrobenzene-d5					*63.7*	*64.1*		*14.0-149*				
(S) 2-Fluorobiphenyl					*72.7*	*73.3*		*34.0-125*				

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.
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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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.

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

B050

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC
Address: Info on file
Billing Information: Info on file
Report To: Jake Janicek, Brett Middleton, Blair Rollins
Email To: info on file
Copy To: Chris McKisson, remediation@confluence-cc.com
Site Collection Info/Address:
Customer Project Name/Number: A03 596 Flowline Release
State: CO / County/City: Garfield / Time Zone Collected: [ ]PT [X]MT [ ]CT [ ]ET
Phone:
Email:
Site/Facility ID #: A03 596
Compliance Monitoring? [ ] Yes [X] No
Collected By (print): Andrew Smith
Purchase Order #:
Quote #:
DW PWS ID #:
DW Location Code:
Collected By (signature): A Smith
Turnaround Date Required: Standard Turnaround
Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: ______ [ ] Hold: ______
Rush: (Expedite Charges Apply) [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day
Field Filtered (if applicable): [ ] Yes [ ] No
Analysis: ______

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other ______

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Time	Composite End Date	Time	Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	Table 915-1 VOCs	TPH (ORO, GRO, DRO)	Table 915-1 Metal's	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)					Lab Sample # / Comments: L1532239
20220831-A03_596_FL-N_TRENCH@4'	SL	G	8/31/2022	1335				3	G/P	X	X	X	X	X	X					-01

Lab Profile/Line:
Lab Sample Receipt Checklist:
Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Present Y N NA
Bottles Intact Y N NA
Correct Bottles Y N NA
Sufficient Volume Y N NA
Samples Received on Ice Y N NA
VOA - Headspace Acceptable Y N NA
USDA Regulated Soils Y N NA
Samples in Holding Time Y N NA
Residual Chlorine Present Y N NA
Cl Strips: ______
Sample pH Acceptable Y N NA
pH Strips: ______
Sulfide Present Y N NA
Lead Acetate Strips: ______

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None
Packing Material Used:
Radchem sample(s) screened (<500 cpm): Y N NA
SHORT HOLDS PRESENT (<72 hours): Y N N/A
Lab Tracking #:
Samples received via: FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: ______
Cooler 1 Temp Upon Receipt: __oC
Cooler 1 Therm Corr. Factor: __oC
Cooler 1 Corrected Temp: __oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	MTJL LAB USE ONLY
A Smith	9/1/22 1215			Table #:
A	9/1/22 1500			Acctnum: Template: Prelogin:
		M. Webb	9/2/22 900	PM: PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO
Page: ____ of: ____

TRK # 5755 8085 0190

ANALYTICAL REPORT

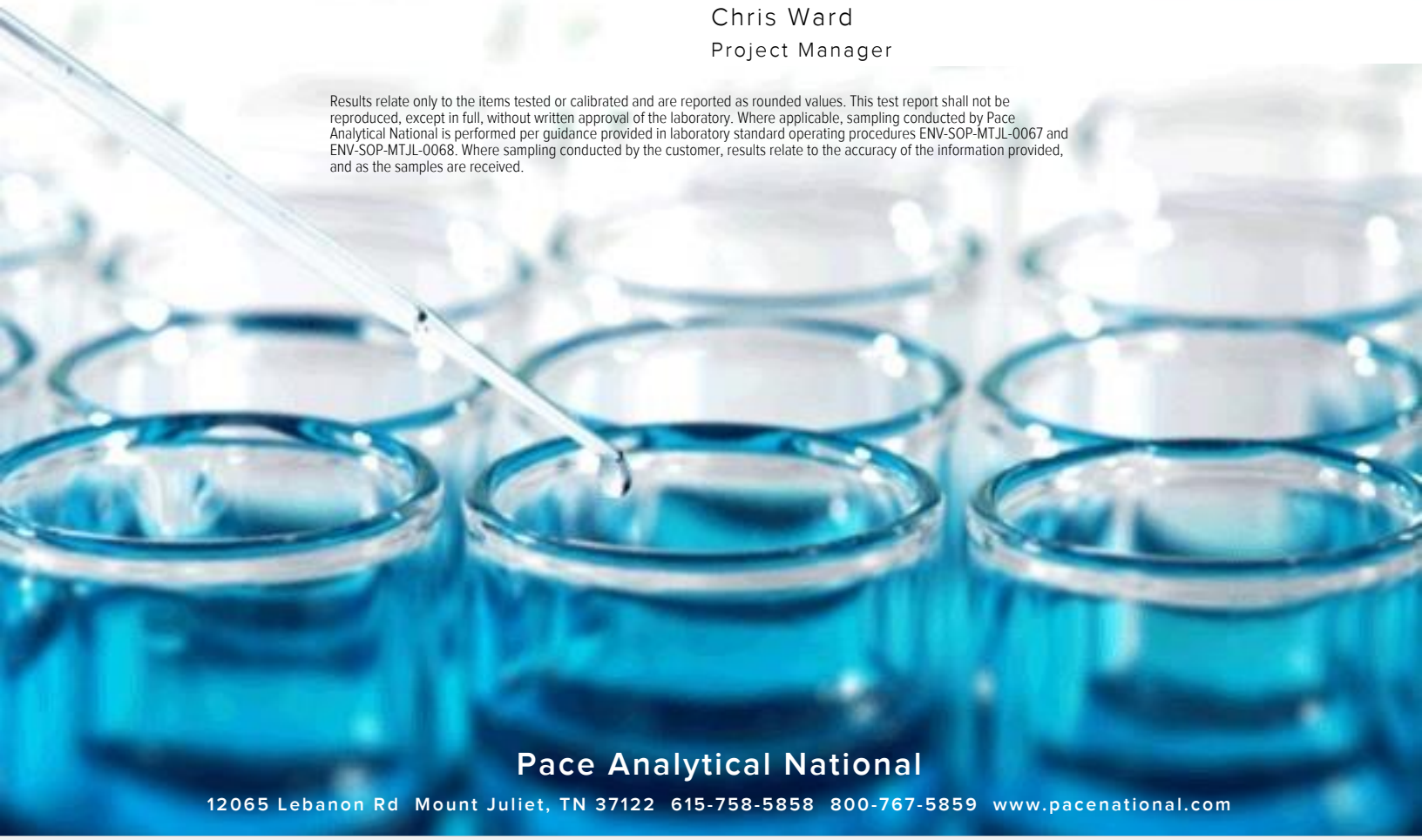
September 19, 2022

Caerus Oil and Gas

Sample Delivery Group:	L1532236
Samples Received:	09/02/2022
Project Number:	
Description:	A03 596 Flowline Release
Site:	A03 596
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

20220831-A03_596_FL-POR @ 4' L1532236-01 Solid

Collected by: A Smith
Collected date/time: 08/31/22 13:40
Received date/time: 09/02/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1924599	1	09/16/22 23:08	09/16/22 23:08	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1924000	1	09/10/22 22:05	09/13/22 20:34	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1925213	1	09/15/22 13:00	09/15/22 15:00	SGB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1924190	1	09/14/22 10:17	09/16/22 14:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1923240	1	09/12/22 16:58	09/14/22 14:23	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1921387	1	09/05/22 15:36	09/14/22 00:21	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1923244	5	09/12/22 17:05	09/14/22 00:03	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1921706	1	09/04/22 13:16	09/07/22 15:40	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1923252	1	09/04/22 13:16	09/08/22 19:59	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	5	09/13/22 10:10	09/14/22 01:44	NH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1925133	50	09/13/22 10:10	09/14/22 10:46	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1922988	1	09/09/22 04:22	09/09/22 13:54	JMB	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
	SAR				
Sodium Adsorption Ratio	8.01		1	09/16/2022 23:08	WG1924599

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	09/13/2022 20:34	WG1924000

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	7.73	T8	1	09/15/2022 15:00	WG1925213

Sample Narrative:

L1532236-01 WG1925213: 7.73 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	1710		10.0	1	09/16/2022 14:10	WG1924190

Sample Narrative:

L1532236-01 WG1924190: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Barium	566		0.500	1	09/14/2022 14:23	WG1923240
Cadmium	ND		0.500	1	09/14/2022 14:23	WG1923240
Copper	11.6		2.00	1	09/14/2022 14:23	WG1923240
Lead	12.1		0.500	1	09/14/2022 14:23	WG1923240
Nickel	12.8		2.00	1	09/14/2022 14:23	WG1923240
Selenium	ND		2.00	1	09/14/2022 14:23	WG1923240
Silver	ND		1.00	1	09/14/2022 14:23	WG1923240
Zinc	34.2		5.00	1	09/14/2022 14:23	WG1923240

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	0.668		0.200	1	09/14/2022 00:21	WG1921387

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	2.92		1.00	5	09/14/2022 00:03	WG1923244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	0.216		0.100	1	09/07/2022 15:40	WG1921706
(S) a,a,a-Trifluorotoluene(FID)	*90.6*		*77.0-120*		*09/07/2022 15:40*	WG1921706

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	09/08/2022 19:59	WG1923252
Toluene	ND		0.00500	1	09/08/2022 19:59	WG1923252
Ethylbenzene	ND		0.00250	1	09/08/2022 19:59	WG1923252
Xylenes, Total	ND		0.00650	1	09/08/2022 19:59	WG1923252
1,2,4-Trimethylbenzene	ND		0.00500	1	09/08/2022 19:59	WG1923252
1,3,5-Trimethylbenzene	0.0230		0.00500	1	09/08/2022 19:59	WG1923252
(S) Toluene-d8	*94.6*		*75.0-131*		*09/08/2022 19:59*	WG1923252
(S) 4-Bromofluorobenzene	*109*		*67.0-138*		*09/08/2022 19:59*	WG1923252
(S) 1,2-Dichloroethane-d4	*112*		*70.0-130*		*09/08/2022 19:59*	WG1923252

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4830		200	50	09/14/2022 10:46	WG1925133
C28-C36 Motor Oil Range	50.1		20.0	5	09/14/2022 01:44	WG1925133
(S) o-Terphenyl	*0.000*	J2	*18.0-148*		*09/14/2022 01:44*	WG1925133
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*09/14/2022 10:46*	WG1925133

Sample Narrative:

L1532236-01 WG1925133: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Anthracene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Benzo(a)anthracene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Benzo(b)fluoranthene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Benzo(k)fluoranthene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Benzo(a)pyrene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Chrysene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Dibenz(a,h)anthracene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Fluoranthene	ND		0.00600	1	09/09/2022 13:54	WG1922988
Fluorene	0.247		0.00600	1	09/09/2022 13:54	WG1922988
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/09/2022 13:54	WG1922988
1-Methylnaphthalene	1.40		0.0200	1	09/09/2022 13:54	WG1922988
2-Methylnaphthalene	2.80		0.0200	1	09/09/2022 13:54	WG1922988
Naphthalene	0.924		0.0200	1	09/09/2022 13:54	WG1922988
Pyrene	ND		0.00600	1	09/09/2022 13:54	WG1922988
(S) p-Terphenyl-d14	*99.5*		*23.0-120*		*09/09/2022 13:54*	WG1922988
(S) Nitrobenzene-d5	*2370*	J1	*14.0-149*		*09/09/2022 13:54*	WG1922988
(S) 2-Fluorobiphenyl	*137*	J1	*34.0-125*		*09/09/2022 13:54*	WG1922988

Sample Narrative:

L1532236-01 WG1922988: Surrogate failure due to matrix interference

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

Method Blank (MB)

(MB) R3837202-1 09/13/22 18:09

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

L1532232-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-03 09/13/22 19:11 • (DUP) R3837202-11 09/13/22 19:16

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

L1532232-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-10 09/13/22 19:53 • (DUP) R3837202-12 09/13/22 19:58

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

Laboratory Control Sample (LCS)

(LCS) R3837202-2 09/13/22 18:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1532219-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-7 09/13/22 18:30 • (MSD) R3837202-8 09/13/22 18:35

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 %
Hexavalent Chromium	20.0	ND	12.7	14.3	63.4	71.6	1	75.0-125	J6	J6	12.1	20

Sample Narrative:

OS: Sample is a reducer.

L1532219-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-10 09/13/22 18:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	636	ND	368	57.9	50	75.0-125	J6

Sample Narrative:

OS: Sample is a reducer.

L1532352-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1532352-01 09/15/22 15:00 • (DUP) R3837654-2 09/15/22 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.59	6.64	1	0.756		1

Sample Narrative:

OS: 6.59 at 19.9C

DUP: 6.64 at 19.8C

L1533460-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1533460-07 09/15/22 15:00 • (DUP) R3837654-3 09/15/22 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.29	8.27	1	0.242		1

Sample Narrative:

OS: 8.29 at 19.9C

DUP: 8.27 at 20C

Laboratory Control Sample (LCS)

(LCS) R3837654-1 09/15/22 15:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 19.4C

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

Method Blank (MB)

(MB) R3838102-1 09/16/22 14:10

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

L1532241-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-03 09/16/22 14:10 • (DUP) R3838102-3 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	490	488	1	0.409		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1532610-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1532610-01 09/16/22 14:10 • (DUP) R3838102-4 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	151	152	1	0.662		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3838102-2 09/16/22 14:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1150	102	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3837336-1 09/14/22 13:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		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

Laboratory Control Sample (LCS)

(LCS) R3837336-2 09/14/22 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	96.8	96.8	80.0-120	
Cadmium	100	91.7	91.7	80.0-120	
Copper	100	93.4	93.4	80.0-120	
Lead	100	90.2	90.2	80.0-120	
Nickel	100	91.2	91.2	80.0-120	
Selenium	100	90.9	90.9	80.0-120	
Silver	20.0	17.4	86.9	80.0-120	
Zinc	100	89.5	89.5	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/14/22 14:03 • (MS) R3837336-5 09/14/22 14:14 • (MSD) R3837336-6 09/14/22 14:17

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	436	629	505	193	69.2	1	75.0-125	V	J3 V	21.9	20
Cadmium	100	ND	96.2	94.5	95.9	94.2	1	75.0-125			1.77	20
Copper	100	13.6	114	109	100	95.9	1	75.0-125			4.07	20
Lead	100	14.1	114	109	99.5	94.9	1	75.0-125			4.07	20
Nickel	100	24.9	127	120	102	95.5	1	75.0-125			4.97	20
Selenium	100	ND	94.5	89.8	94.5	89.8	1	75.0-125			5.04	20
Silver	20.0	ND	18.3	17.9	91.4	89.5	1	75.0-125			2.15	20
Zinc	100	47.8	135	125	87.2	77.2	1	75.0-125			7.68	20

Method Blank (MB)

(MB) R3836834-1 09/14/22 00:04

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) R3836834-2 09/14/22 00:07 • (LCSD) R3836834-3 09/14/22 00:10

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	1.07	1.04	107	104	80.0-120			2.98	20

Method Blank (MB)

(MB) R3836787-1 09/13/22 23:35

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) R3836787-2 09/13/22 23:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	84.2	84.2	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/13/22 23:43 • (MS) R3836787-5 09/13/22 23:53 • (MSD) R3836787-6 09/13/22 23:56

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	5.77	87.4	87.5	81.7	81.7	5	75.0-125			0.0769	20

Method Blank (MB)

(MB) R3834752-2 09/07/22 09:32

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)	*95.6*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3834752-1 09/07/22 08:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.84	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*77.0-120*	

Method Blank (MB)

(MB) R3835373-3 09/08/22 13:12

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	*95.4*			*75.0-131*
(S) 4-Bromofluorobenzene	*107*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*113*			*70.0-130*

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

(LCS) R3835373-1 09/08/22 11:01 • (LCSD) R3835373-2 09/08/22 11:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.117	0.123	93.6	98.4	70.0-123			5.00	20
Toluene	0.125	0.107	0.115	85.6	92.0	75.0-121			7.21	20
Ethylbenzene	0.125	0.111	0.124	88.8	99.2	74.0-126			11.1	20
Xylenes, Total	0.375	0.321	0.369	85.6	98.4	72.0-127			13.9	20
1,2,4-Trimethylbenzene	0.125	0.107	0.109	85.6	87.2	70.0-126			1.85	20
1,3,5-Trimethylbenzene	0.125	0.109	0.104	87.2	83.2	73.0-127			4.69	20
(S) Toluene-d8				*99.9*	*94.8*	*75.0-131*				
(S) 4-Bromofluorobenzene				*99.0*	*108*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*115*	*117*	*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) R3836901-1 09/13/22 21:09

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	*68.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3836901-2 09/13/22 21:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	38.6	77.2	50.0-150	
(S) o-Terphenyl			*94.4*	*18.0-148*	

L1532236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532236-01 09/14/22 01:44 • (MS) R3836901-3 09/14/22 01:57 • (MSD) R3836901-4 09/14/22 02:10

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	5380	4530	3990	0.000	0.000	5	50.0-150	E V	E V	12.7	20
(S) o-Terphenyl					*0.000*	*0.000*		*18.0-148*	J2	J2		

Sample Narrative:

OS: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3835423-2 09/09/22 09:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	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
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	*106*			*23.0-120*
(S) Nitrobenzene-d5	*80.6*			*14.0-149*
(S) 2-Fluorobiphenyl	*92.9*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3835423-1 09/09/22 08:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0724	90.5	50.0-120	
Anthracene	0.0800	0.0689	86.1	50.0-126	
Benzo(a)anthracene	0.0800	0.0723	90.4	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0790	98.8	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0784	98.0	49.0-125	
Benzo(a)pyrene	0.0800	0.0685	85.6	42.0-120	
Chrysene	0.0800	0.0770	96.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0704	88.0	47.0-125	
Fluoranthene	0.0800	0.0714	89.3	49.0-129	
Fluorene	0.0800	0.0756	94.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0700	87.5	46.0-125	
1-Methylnaphthalene	0.0800	0.0731	91.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0693	86.6	50.0-120	
Naphthalene	0.0800	0.0706	88.3	50.0-120	
Pyrene	0.0800	0.0760	95.0	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3835423-1 09/09/22 08:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*119*	*23.0-120*	
(S) Nitrobenzene-d5			*93.2*	*14.0-149*	
(S) 2-Fluorobiphenyl			*104*	*34.0-125*	

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.
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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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.

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here: B049

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC	Billing Information: Info on file
Address: Info on file	
Report To: Jake Janicek, Brett Middleton, Blair Rollins	Email To: info on file
Copy To: Chris McKisson, remediation@confluence-cc.com	Site Collection Info/Address:
Customer Project Name/Number: A03 596 Flowline Release	State: CO / County/City: Garfield / Time Zone Collected: [ ]PT [X]MT [ ]CT [ ]ET
Phone: / Email:	Site/Facility ID #: A03 596 / Compliance Monitoring? [ ] Yes [X] No
Collected By (print): Andrew Smith	Purchase Order # : / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (Signature): A Smith	Turnaround Date Required: Standard Turnaround / Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: (Expedite Charges Apply) [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day / Field Filtered (if applicable): [ ] Yes [ ] No / Analysis: _____

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	Table 915-1 VOCs	TPH (ORO, GRO, DRO)	Table 915-1 Metal's	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Lab Sample # / Comments
20220831-A03_596_FL-POR@4'	SL	G	8/31/2022	1340				3	G/P	X	X	X	X	X	X	L1537230 -01

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:
Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Present Y N NA
Bottles Intact Y N NA
Correct Bottles Y N NA
Sufficient Volume Y N NA
Samples Received on Ice Y N NA
VOA - Headspace Acceptable Y N NA
USDA Regulated Soils Y N NA
Samples in Holding Time Y N NA
Residual Chlorine Present Y N NA
Cl Strips: _____
Sample pH Acceptable Y N NA
pH Strips: _____
Sulfide Present Y N NA
Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments: L1537230

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #:

Samples received via: FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: __oC
Cooler 1 Therm Corr. Factor: __oC
Cooler 1 Corrected Temp: __oC
Comments:

Relinquished by/Company: (Signature) A Smith	Date/Time: 9/1/22 1250	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time: 9/1/22 1500	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time: 9/2/22 900

TRIP BLANK RECEIVED: Y N NA
HCL MeOH TSP Other

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Non Conformance(s): YES / NO

Page: ____ of: ____

TRIP 5255 2085 0140

ANALYTICAL REPORT

October 03, 2022

Revised Report

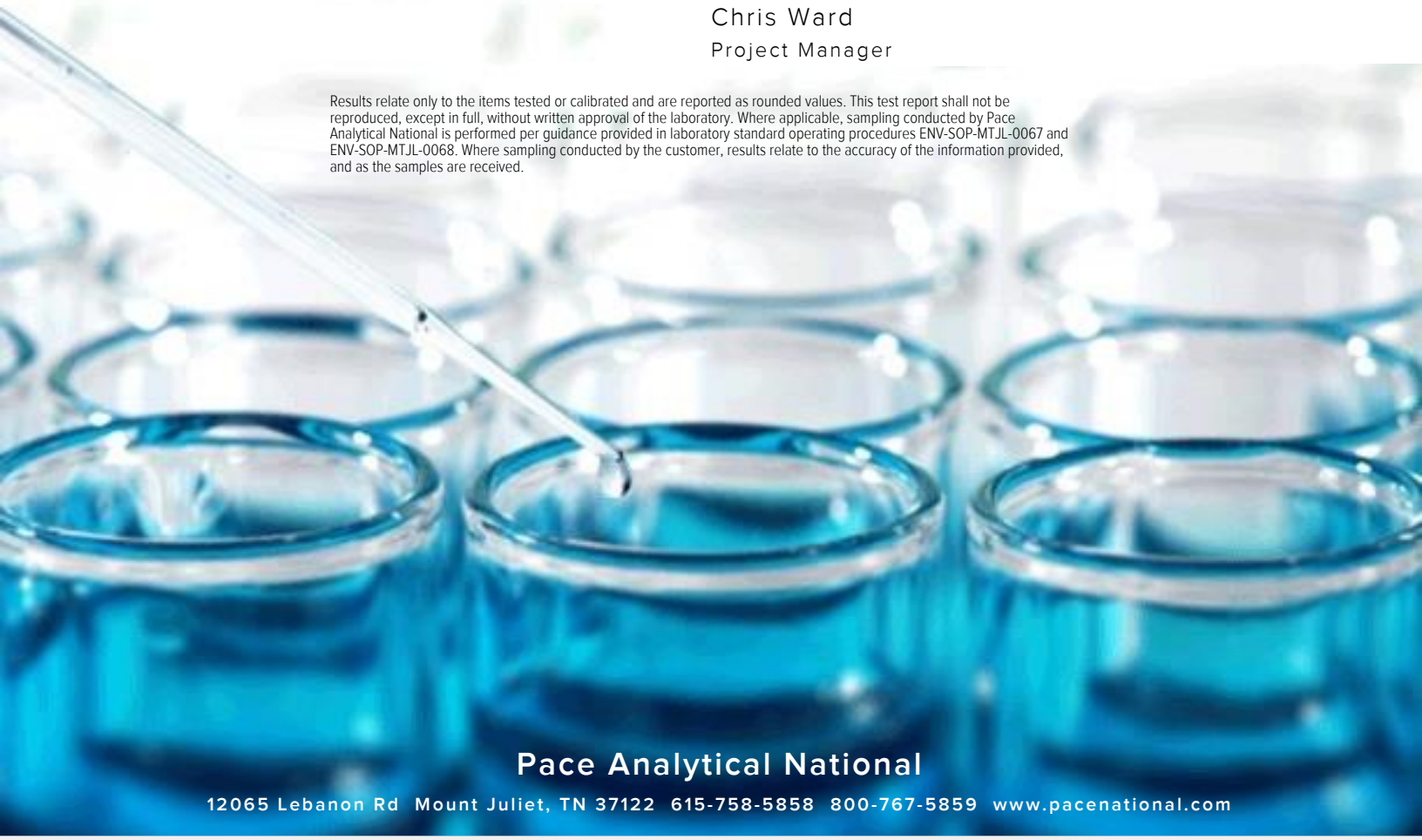
Caerus Oil and Gas

Sample Delivery Group:	L1532234
Samples Received:	09/02/2022
Project Number:	
Description:	A03 596 Flowline Release
Site:	A03 596
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward

Project Manager



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

20220831-A03_596_FL-STOCK_COMP L1532234-01 Solid

Collected by: Tristan Schmalz
Collected date/time: 08/31/22 14:00
Received date/time: 09/02/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1924599	1	09/16/22 21:50	09/16/22 21:50	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1924000	1	09/10/22 22:05	09/13/22 20:29	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1925207	1	09/13/22 15:00	09/13/22 16:00	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1924190	1	09/14/22 10:17	09/16/22 14:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1923240	1	09/12/22 16:58	09/14/22 14:20	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1921387	1	09/05/22 15:36	09/14/22 00:18	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1923244	5	09/12/22 17:05	09/13/22 23:59	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1924052	1	09/07/22 16:21	09/10/22 10:22	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1923252	1	09/07/22 15:31	09/08/22 19:40	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1924331	10	09/12/22 09:17	09/12/22 22:36	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1922993	1	09/09/22 04:42	09/09/22 18:14	AMM	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

Report Revision History

Level II Report - Version 1: 09/19/22 11:42

Project Narrative

Rerun for correct project info

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.26		1	09/16/2022 21:50	WG1924599

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	09/13/2022 20:29	WG1924000

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.87	T8	1	09/13/2022 16:00	WG1925207

Sample Narrative:

L1532234-01 WG1925207: 8.87 at 20.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	657		10.0	1	09/16/2022 14:10	WG1924190

Sample Narrative:

L1532234-01 WG1924190: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	483		0.0852	0.500	1	09/14/2022 14:20	WG1923240
Cadmium	0.360	J	0.0471	0.500	1	09/14/2022 14:20	WG1923240
Copper	13.8		0.400	2.00	1	09/14/2022 14:20	WG1923240
Lead	15.6		0.208	0.500	1	09/14/2022 14:20	WG1923240
Nickel	18.8		0.132	2.00	1	09/14/2022 14:20	WG1923240
Selenium	U		0.764	2.00	1	09/14/2022 14:20	WG1923240
Silver	U		0.127	1.00	1	09/14/2022 14:20	WG1923240
Zinc	39.8		0.832	5.00	1	09/14/2022 14:20	WG1923240

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	0.384		0.0167	0.200	1	09/14/2022 00:18	WG1921387

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.81		0.100	1.00	5	09/13/2022 23:59	WG1923244

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	1.52		0.0217	0.100	1	09/10/2022 10:22	WG1924052
(S) a,a,a-Trifluorotoluene(FID)	*97.8*			*77.0-120*		*09/10/2022 10:22*	WG1924052

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	0.0169		0.000467	0.00100	1	09/08/2022 19:40	WG1923252
Toluene	0.0955		0.00130	0.00500	1	09/08/2022 19:40	WG1923252
Ethylbenzene	0.0112		0.000737	0.00250	1	09/08/2022 19:40	WG1923252
Xylenes, Total	0.178		0.000880	0.00650	1	09/08/2022 19:40	WG1923252
1,2,4-Trimethylbenzene	0.0465		0.00158	0.00500	1	09/08/2022 19:40	WG1923252
1,3,5-Trimethylbenzene	0.176		0.00200	0.00500	1	09/08/2022 19:40	WG1923252
(S) Toluene-d8	*101*			*75.0-131*		*09/08/2022 19:40*	WG1923252
(S) 4-Bromofluorobenzene	*104*			*67.0-138*		*09/08/2022 19:40*	WG1923252
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*09/08/2022 19:40*	WG1923252

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	299		16.1	40.0	10	09/12/2022 22:36	WG1924331
C28-C36 Motor Oil Range	158		2.74	40.0	10	09/12/2022 22:36	WG1924331
(S) o-Terphenyl	*54.1*			*18.0-148*		*09/12/2022 22:36*	WG1924331

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
Acenaphthene	U		0.00209	0.00600	1	09/09/2022 18:14	WG1922993
Anthracene	0.00251	J	0.00230	0.00600	1	09/09/2022 18:14	WG1922993
Benzo(a)anthracene	U		0.00173	0.00600	1	09/09/2022 18:14	WG1922993
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/09/2022 18:14	WG1922993
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/09/2022 18:14	WG1922993
Benzo(a)pyrene	U		0.00179	0.00600	1	09/09/2022 18:14	WG1922993
Chrysene	U		0.00232	0.00600	1	09/09/2022 18:14	WG1922993
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/09/2022 18:14	WG1922993
Fluoranthene	U		0.00227	0.00600	1	09/09/2022 18:14	WG1922993
Fluorene	0.0218		0.00205	0.00600	1	09/09/2022 18:14	WG1922993
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/09/2022 18:14	WG1922993
1-Methylnaphthalene	0.0416		0.00449	0.0200	1	09/09/2022 18:14	WG1922993
2-Methylnaphthalene	0.0423		0.00427	0.0200	1	09/09/2022 18:14	WG1922993
Naphthalene	0.0159	J	0.00408	0.0200	1	09/09/2022 18:14	WG1922993
Pyrene	U		0.00200	0.00600	1	09/09/2022 18:14	WG1922993
(S) p-Terphenyl-d14	*80.0*			*23.0-120*		*09/09/2022 18:14*	WG1922993
(S) Nitrobenzene-d5	*135*			*14.0-149*		*09/09/2022 18:14*	WG1922993
(S) 2-Fluorobiphenyl	*86.6*			*34.0-125*		*09/09/2022 18:14*	WG1922993

Method Blank (MB)

(MB) R3837202-1 09/13/22 18:09

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

L1532232-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-03 09/13/22 19:11 • (DUP) R3837202-11 09/13/22 19:16

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

L1532232-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1532232-10 09/13/22 19:53 • (DUP) R3837202-12 09/13/22 19:58

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

Laboratory Control Sample (LCS)

(LCS) R3837202-2 09/13/22 18:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1532219-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-7 09/13/22 18:30 • (MSD) R3837202-8 09/13/22 18:35

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 %
Hexavalent Chromium	20.0	U	12.7	14.3	63.4	71.6	1	75.0-125	J6	J6	12.1	20

Sample Narrative:

OS: Sample is a reducer.

L1532219-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1532219-01 09/13/22 18:24 • (MS) R3837202-10 09/13/22 18:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	636	U	368	57.9	50	75.0-125	J6

Sample Narrative:

OS: Sample is a reducer.

L1532241-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-02 09/13/22 16:00 • (DUP) R3836727-2 09/13/22 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.08	8.14	1	0.740		1

Sample Narrative:

OS: 8.08 at 20.8C

DUP: 8.14 at 20.3C

L1532263-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1532263-02 09/13/22 16:00 • (DUP) R3836727-3 09/13/22 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.14	8.09	1	0.616		1

Sample Narrative:

OS: 8.14 at 20.7C

DUP: 8.09 at 20.8C

Laboratory Control Sample (LCS)

(LCS) R3836727-1 09/13/22 16:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 19.4C

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

Method Blank (MB)

(MB) R3838102-1 09/16/22 14:10

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

L1532241-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1532241-03 09/16/22 14:10 • (DUP) R3838102-3 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	490	488	1	0.409		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1532610-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1532610-01 09/16/22 14:10 • (DUP) R3838102-4 09/16/22 14:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	151	152	1	0.662		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3838102-2 09/16/22 14:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1150	102	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3837336-1 09/14/22 13:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		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

Laboratory Control Sample (LCS)

(LCS) R3837336-2 09/14/22 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	96.8	96.8	80.0-120	
Cadmium	100	91.7	91.7	80.0-120	
Copper	100	93.4	93.4	80.0-120	
Lead	100	90.2	90.2	80.0-120	
Nickel	100	91.2	91.2	80.0-120	
Selenium	100	90.9	90.9	80.0-120	
Silver	20.0	17.4	86.9	80.0-120	
Zinc	100	89.5	89.5	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/14/22 14:03 • (MS) R3837336-5 09/14/22 14:14 • (MSD) R3837336-6 09/14/22 14:17

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	436	629	505	193	69.2	1	75.0-125	V	J3 V	21.9	20
Cadmium	100	0.305	96.2	94.5	95.9	94.2	1	75.0-125			1.77	20
Copper	100	13.6	114	109	100	95.9	1	75.0-125			4.07	20
Lead	100	14.1	114	109	99.5	94.9	1	75.0-125			4.07	20
Nickel	100	24.9	127	120	102	95.5	1	75.0-125			4.97	20
Selenium	100	U	94.5	89.8	94.5	89.8	1	75.0-125			5.04	20
Silver	20.0	U	18.3	17.9	91.4	89.5	1	75.0-125			2.15	20
Zinc	100	47.8	135	125	87.2	77.2	1	75.0-125			7.68	20

Method Blank (MB)

(MB) R3836834-1 09/14/22 00:04

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) R3836834-2 09/14/22 00:07 • (LCSD) R3836834-3 09/14/22 00:10

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	1.07	1.04	107	104	80.0-120			2.98	20

Method Blank (MB)

(MB) R3836787-1 09/13/22 23:35

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) R3836787-2 09/13/22 23:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	84.2	84.2	80.0-120	

L1532615-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532615-01 09/13/22 23:43 • (MS) R3836787-5 09/13/22 23:53 • (MSD) R3836787-6 09/13/22 23:56

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	5.77	87.4	87.5	81.7	81.7	5	75.0-125			0.0769	20

Method Blank (MB)

(MB) R3836207-2 09/10/22 08:34

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0272	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3836207-1 09/10/22 07:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.12	74.9	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*77.0-120*	

Method Blank (MB)

(MB) R3835373-3 09/08/22 13:12

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	*95.4*			*75.0-131*
(S) 4-Bromofluorobenzene	*107*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*113*			*70.0-130*

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

(LCS) R3835373-1 09/08/22 11:01 • (LCSD) R3835373-2 09/08/22 11:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.117	0.123	93.6	98.4	70.0-123			5.00	20
Toluene	0.125	0.107	0.115	85.6	92.0	75.0-121			7.21	20
Ethylbenzene	0.125	0.111	0.124	88.8	99.2	74.0-126			11.1	20
Xylenes, Total	0.375	0.321	0.369	85.6	98.4	72.0-127			13.9	20
1,2,4-Trimethylbenzene	0.125	0.107	0.109	85.6	87.2	70.0-126			1.85	20
1,3,5-Trimethylbenzene	0.125	0.109	0.104	87.2	83.2	73.0-127			4.69	20
(S) Toluene-d8				*99.9*	*94.8*	*75.0-131*				
(S) 4-Bromofluorobenzene				*99.0*	*108*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*115*	*117*	*70.0-130*				

Method Blank (MB)

(MB) R3836308-1 09/12/22 20:43

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	0.350	J	0.274	4.00
(S) o-Terphenyl	*47.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3836308-2 09/12/22 20:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	27.5	55.0	50.0-150	
(S) o-Terphenyl			*58.7*	*18.0-148*	

L1532262-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532262-02 09/12/22 21:08 • (MS) R3836308-3 09/12/22 21:21 • (MSD) R3836308-4 09/12/22 21:33

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	47.8	2.70	23.2	24.0	42.9	43.8	1	50.0-150	J6	J6	3.39	20
(S) o-Terphenyl					*35.0*	*36.1*		*18.0-148*				

Method Blank (MB)

(MB) R3835873-2 09/09/22 12:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	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
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	*80.2*			*23.0-120*
(S) Nitrobenzene-d5	*83.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*84.3*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3835873-1 09/09/22 12:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0601	75.1	50.0-120	
Anthracene	0.0800	0.0620	77.5	50.0-126	
Benzo(a)anthracene	0.0800	0.0620	77.5	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0528	66.0	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0523	65.4	49.0-125	
Benzo(a)pyrene	0.0800	0.0557	69.6	42.0-120	
Chrysene	0.0800	0.0616	77.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0507	63.4	47.0-125	
Fluoranthene	0.0800	0.0665	83.1	49.0-129	
Fluorene	0.0800	0.0623	77.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0574	71.8	46.0-125	
1-Methylnaphthalene	0.0800	0.0625	78.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0634	79.3	50.0-120	
Naphthalene	0.0800	0.0621	77.6	50.0-120	
Pyrene	0.0800	0.0599	74.9	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3835873-1 09/09/22 12:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*73.1*	*23.0-120*	
(S) Nitrobenzene-d5			*80.0*	*14.0-149*	
(S) 2-Fluorobiphenyl			*80.6*	*34.0-125*	

L1531665-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1531665-07 09/12/22 21:27 • (MS) R3836578-1 09/12/22 21:45 • (MSD) R3836578-2 09/12/22 22:02

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0800	0.00615	0.0533	0.0599	58.9	67.2	1	14.0-127			11.7	27
Anthracene	0.0800	0.00266	0.0554	0.0629	65.9	75.3	1	10.0-145			12.7	30
Benzo(a)anthracene	0.0800	U	0.0551	0.0624	68.9	78.0	1	10.0-139			12.4	30
Benzo(b)fluoranthene	0.0800	U	0.0480	0.0542	60.0	67.8	1	10.0-140			12.1	36
Benzo(k)fluoranthene	0.0800	U	0.0462	0.0533	57.8	66.6	1	10.0-137			14.3	31
Benzo(a)pyrene	0.0800	U	0.0544	0.0626	68.0	78.3	1	10.0-141			14.0	31
Chrysene	0.0800	U	0.0528	0.0600	66.0	75.0	1	10.0-145			12.8	30
Dibenz(a,h)anthracene	0.0800	U	0.0410	0.0482	51.3	60.3	1	10.0-132			16.1	31
Fluoranthene	0.0800	0.00228	0.0584	0.0658	70.2	79.4	1	10.0-153			11.9	33
Fluorene	0.0800	0.00531	0.0567	0.0629	64.2	72.0	1	11.0-130			10.4	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0438	0.0503	54.8	62.9	1	10.0-137			13.8	32
1-Methylnaphthalene	0.0800	0.0167	0.0577	0.0644	51.3	59.6	1	10.0-142			11.0	28
2-Methylnaphthalene	0.0800	0.0458	0.0629	0.0725	21.4	33.4	1	10.0-137			14.2	28
Naphthalene	0.0800	0.162	0.0539	0.0619	0.000	0.000	1	10.0-135	J6	J6	13.8	27
Pyrene	0.0800	0.00215	0.0499	0.0562	59.7	67.6	1	10.0-148			11.9	35
(S) p-Terphenyl-d14					*64.0*	*74.6*		*23.0-120*				
(S) Nitrobenzene-d5					*92.0*	*102*		*14.0-149*				
(S) 2-Fluorobiphenyl					*71.1*	*80.6*		*34.0-125*				

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.
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.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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.

Pace Analytical®

CHAIN-OF-CUSTODY Analytical Request Document

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

B051

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC
Address: Info on file
Billing Information: Info on file
Report To: Jake Janicek, Brett Middleton, Blair Rollins
Email To: info on file
Copy To: Chris McKisson, remediation@confluence-cc.com
Site Collection Info/Address:
Customer Project Name/Number: A03 596 Flowline Release
State: CO / County/City: Garfield / Time Zone Collected: [ ]PT [X]MT [ ]CT [ ]ET

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other ______

Phone:
Email:
Site/Facility ID #: A03 596
Compliance Monitoring? [ ] Yes [X] No
Collected By (print): Andrew Smith
Purchase Order #:
Quote #:
DW PWS ID #:
DW Location Code:
Collected By (signature): A Smith
Turnaround Date Required: Standard Turnaround
Immediately Packed on Ice: [X] Yes [ ] No

Sample Disposal:
[ ] Dispose as appropriate
[ ] Return
[ ] Archive: ______
[ ] Hold: ______

Rush: (Expedite Charges Apply)
[ ] Same Day [ ] Next Day
[ ] 2 Day [ ] 3 Day
[ ] 4 Day [ ] 5 Day

Field Filtered (if applicable): [ ] Yes [ ] No
Analysis: ______

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	Table 915-1 VOCs	TPH (ORO, GRO, DRO)	Table 915-1 Metal's	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Lab Sample # / Comments: L1532234
20220831-A03_596_FL-STOCK_COMP	SL	G	8/31/2022	1400				3	G/P	X	X	X	X	X	X	-01

Lab Profile/Line:
Lab Sample Receipt Checklist:
Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Present Y N NA
Bottles Intact Y N NA
Correct Bottles Y N NA
Sufficient Volume Y N NA
Samples Received on Ice Y N NA
VOA - Headspace Acceptable Y N NA
USDA Regulated Soils Y N NA
Samples in Holding Time Y N NA
Residual Chlorine Present Y N NA
Cl Strips: ______
Sample pH Acceptable Y N NA
pH Strips: ______
Sulfide Present Y N NA
Lead Acetate Strips: ______

LAB USE ONLY:
Lab Sample # / Comments: L1532234

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None
Packing Material Used:
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
Lab Tracking #:
Samples received via: FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: ______
Cooler 1 Temp Upon Receipt: __oC
Cooler 1 Therm Corr. Factor: __oC
Cooler 1 Corrected Temp: __oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
A Smith	9/1/22 1215	[signature]	
[signature]	9/1/22 1500		
		M. [signature]	9/2/22 800

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO
Page: ____ of: ____

TRK# 5255 8085 0190

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Report Summary

Wednesday August 04, 2010

Report Number: L471053
Samples Received: 07/29/10
Client Project:

Description: A03 Pit Closure

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 04, 2010

ESC Sample # : L471053-01

Date Received : July 29, 2010
Description : A03 Pit Closure

Site ID :

Sample ID : A03-N. BACK-072810

Project # :

Collected By : Blair Rollins
Collection Date : 07/28/10 10:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	10.	mg/kg	3060A/7196A	08/03/10	5
Chromium,Trivalent	49.	10.	mg/kg	Calc.	07/31/10	1
ORP	150		mV	2580	08/03/10	1
pH	6.7		su	9045D	07/31/10	1
Sodium Adsorption Ratio	2.6			Calc.	08/04/10	1
Specific Conductance	79.		umhos/cm	9050AMod	08/03/10	1
Mercury	BDL	0.020	mg/kg	7471	08/01/10	1
Arsenic	8.8	1.0	mg/kg	6010B	07/31/10	1
Barium	270	0.25	mg/kg	6010B	07/31/10	1
Cadmium	0.54	0.50	mg/kg	6010B	08/03/10	2
Chromium	49.	0.50	mg/kg	6010B	07/31/10	1
Copper	25.	1.0	mg/kg	6010B	07/31/10	1
Lead	21.	0.25	mg/kg	6010B	07/31/10	1
Nickel	26.	2.0	mg/kg	6010B	08/03/10	2
Selenium	BDL	1.0	mg/kg	6010B	07/31/10	1
Silver	0.54	0.50	mg/kg	6010B	07/31/10	1
Zinc	47.	1.5	mg/kg	6010B	07/31/10	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/29/10	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/29/10	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/29/10	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/29/10	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/29/10	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.3		% Rec.	8021/8015	07/29/10	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	07/29/10	5
TPH (GC/FID) High Fraction	5.0	4.0	mg/kg	3546/DRO	07/30/10	1
Surrogate recovery(%)						
o-Terphenyl	84.3		% Rec.	3546/DRO	07/30/10	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L471053-01 (PH) - 6.7@21.4c
L471053-01 (CR6) - diluted due to dark sample, used sample blank

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REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 04, 2010

ESC Sample # : L471053-01

Site ID :

Project # :

Date Received : July 29, 2010
Description : A03 Pit Closure

Sample ID : A03-N. BACK-072810

Collected By : Blair Rollins
Collection Date : 07/28/10 10:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Fluorene	0.0073	0.0060	mg/kg	8270C-SIM	08/02/10	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Naphthalene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
1-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
2-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	08/02/10	1
Surrogate Recovery						
Nitrobenzene-d5	71.2		% Rec.	8270C-SIM	08/02/10	1
2-Fluorobiphenyl	68.2		% Rec.	8270C-SIM	08/02/10	1
p-Terphenyl-d14	113.		% Rec.	8270C-SIM	08/02/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 08/04/10 16:00 Printed: 08/04/10 16:00
L471053-01 (PH) - 6.7@21.4c
L471053-01 (CR6) - diluted due to dark sample, used sample blank

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L471053-01	WG491136	SAMP	Chromium,Hexavalent	R1311089	O

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
08/04/10 at 16:00:43

TSR Signing Reports: 358
R4 - Rush: Three Day

Log all samples to separate L#s. Log all PAHs as SV8270PAHSIM. Log all BTEX samples by 8021.

Sample: L471053-01 Account: ENCANACO Received: 07/29/10 09:00 Due Date: 08/03/10 00:00 RPT Date: 08/04/10 16:00

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Quality Assurance Report
Level II

L471053

August 04, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Benzene	< .0005	mg/kg			WG490720	07/29/10 14:01
Ethylbenzene	< .0005	mg/kg			WG490720	07/29/10 14:01
Toluene	< .005	mg/kg			WG490720	07/29/10 14:01
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG490720	07/29/10 14:01
Total Xylene	< .0015	mg/kg			WG490720	07/29/10 14:01
a,a,a-Trifluorotoluene(FID)		% Rec.	98.08	59-128	WG490720	07/29/10 14:01
a,a,a-Trifluorotoluene(PID)		% Rec.	103.0	54-144	WG490720	07/29/10 14:01
TPH (GC/FID) High Fraction	< 4	ppm			WG490981	07/30/10 13:18
o-Terphenyl		% Rec.	89.17	50-150	WG490981	07/30/10 13:18
Arsenic	< 1	mg/kg			WG490955	07/30/10 23:42
Barium	< .25	mg/kg			WG490955	07/30/10 23:42
Cadmium	< .25	mg/kg			WG490955	07/30/10 23:42
Chromium	< .5	mg/kg			WG490955	07/30/10 23:42
Copper	< 1	mg/kg			WG490955	07/30/10 23:42
Lead	< .25	mg/kg			WG490955	07/30/10 23:42
Selenium	< 1	mg/kg			WG490955	07/30/10 23:42
Silver	< .5	mg/kg			WG490955	07/30/10 23:42
Zinc	< 1.5	mg/kg			WG490955	07/30/10 23:42
Mercury	< .02	mg/kg			WG490972	08/01/10 10:25
pH	5.30	su			WG491011	07/31/10 10:45
1-Methylnaphthalene	< .006	mg/kg			WG490985	08/02/10 08:57
2-Chloronaphthalene	< .006	mg/kg			WG490985	08/02/10 08:57
2-Methylnaphthalene	< .006	mg/kg			WG490985	08/02/10 08:57
Acenaphthene	< .006	mg/kg			WG490985	08/02/10 08:57
Acenaphthylene	< .006	mg/kg			WG490985	08/02/10 08:57
Anthracene	< .006	mg/kg			WG490985	08/02/10 08:57
Benzo(a)anthracene	< .006	mg/kg			WG490985	08/02/10 08:57
Benzo(a)pyrene	< .006	mg/kg			WG490985	08/02/10 08:57
Benzo(b)fluoranthene	< .006	mg/kg			WG490985	08/02/10 08:57
Benzo(g,h,i)perylene	< .006	mg/kg			WG490985	08/02/10 08:57
Benzo(k)fluoranthene	< .006	mg/kg			WG490985	08/02/10 08:57
Chrysene	< .006	mg/kg			WG490985	08/02/10 08:57
Dibenz(a,h)anthracene	< .006	mg/kg			WG490985	08/02/10 08:57
Fluoranthene	< .006	mg/kg			WG490985	08/02/10 08:57
Fluorene	< .006	mg/kg			WG490985	08/02/10 08:57
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG490985	08/02/10 08:57
Naphthalene	< .006	mg/kg			WG490985	08/02/10 08:57
Phenanthrene	< .006	mg/kg			WG490985	08/02/10 08:57
Pyrene	< .006	mg/kg			WG490985	08/02/10 08:57
2-Fluorobiphenyl		% Rec.	81.22	21-120	WG490985	08/02/10 08:57
Nitrobenzene-d5		% Rec.	75.07	33-114	WG490985	08/02/10 08:57
p-Terphenyl-d14		% Rec.	98.87	18-142	WG490985	08/02/10 08:57
Chromium,Hexavalent	< 2	mg/kg			WG491136	08/03/10 16:21
Nickel	< 1	mg/kg			WG490955	08/03/10 16:53

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L471053

August 04, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Specific Conductance	0.890	umhos/cm			WG491172	08/03/10 15:10

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Arsenic	mg/kg	26.0	28.0	7.02	20	L471124-05	WG490955
Barium	mg/kg	100.	85.9	18.1	20	L471124-05	WG490955
Cadmium	mg/kg	0	0	0	20	L471124-05	WG490955
Chromium	mg/kg	13.0	14.8	10.7	20	L471124-05	WG490955
Copper	mg/kg	26.0	30.7	17.3	20	L471124-05	WG490955
Lead	mg/kg	72.0	55.6	25.6*	20	L471124-05	WG490955
Selenium	mg/kg	0	0	0	20	L471124-05	WG490955
Silver	mg/kg	0	0	0	20	L471124-05	WG490955
Zinc	mg/kg	90.0	71.0	23.4*	20	L471124-05	WG490955
Mercury	mg/kg	0.0230	0.0250	8.77	20	L471045-01	WG490972
pH	su	7.60	7.50	1.32*	1	L470825-01	WG491011
Specific Conductance	umhos/cm	120.	120.	1.90	20	L471045-01	WG491172
Chromium,Hexavalent	mg/kg	0	0	0	20	L471047-01	WG491136
Chromium,Hexavalent	mg/kg	0	0	0	20	L471362-04	WG491136
ORP	mV	220.	220.	0	20	L471045-01	WG491167
ORP	mV	200.	200.	1.49	20	L471333-01	WG491167
Nickel	mg/kg	21.0	0	NA	20	L471124-05	WG490955

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Benzene	mg/kg	.05	0.0535	107.	76-113	WG490720
Ethylbenzene	mg/kg	.05	0.0544	109.	78-115	WG490720
Toluene	mg/kg	.05	0.0541	108.	76-114	WG490720
Total Xylene	mg/kg	.15	0.165	110.	81-118	WG490720
a,a,a-Trifluorotoluene(PID)				101.6	54-144	WG490720
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.09	111.	67-135	WG490720
a,a,a-Trifluorotoluene(FID)				90.80	59-128	WG490720
TPH (GC/FID) High Fraction	ppm	60	51.1	85.1	50-150	WG490981
o-Terphenyl				95.53	50-150	WG490981
Arsenic	mg/kg	192	190.	99.0	78.6-120.8	WG490955
Barium	mg/kg	420	397.	94.5	78.8-121.4	WG490955
Cadmium	mg/kg	70.1	58.0	82.7	78.5-121.5	WG490955
Chromium	mg/kg	168	160.	95.2	80.4-120.2	WG490955
Copper	mg/kg	122	123.	101.	81.6-119.7	WG490955
Lead	mg/kg	113	111.	98.2	77.3-122.1	WG490955
Selenium	mg/kg	176	163.	92.6	75.6-125.0	WG490955

* Performance of this Analyte is outside of established criteria.
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Level II

L471053

August 04, 2010

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Silver	mg/kg	115	106.	92.2	66-133.9	WG490955
Zinc	mg/kg	437	391.	89.5	78.5-121.7	WG490955
Mercury	mg/kg	8.77	9.44	108.	71.6-127.7	WG490972
pH	su	9.36	9.30	99.4	98.9-102.0	WG491011
1-Methylnaphthalene	mg/kg	.033	0.0251	76.1	41-110	WG490985
2-Chloronaphthalene	mg/kg	.033	0.0249	75.5	43-109	WG490985
2-Methylnaphthalene	mg/kg	.033	0.0237	71.8	38-104	WG490985
Acenaphthene	mg/kg	.033	0.0243	73.6	48-103	WG490985
Acenaphthylene	mg/kg	.033	0.0227	68.8	43-106	WG490985
Anthracene	mg/kg	.033	0.0237	72.0	51-110	WG490985
Benzo(a)anthracene	mg/kg	.033	0.0222	67.2	38-126	WG490985
Benzo(a)pyrene	mg/kg	.033	0.0222	67.3	47-118	WG490985
Benzo(b)fluoranthene	mg/kg	.033	0.0198	60.1	47-118	WG490985
Benzo(g,h,i)perylene	mg/kg	.033	0.0224	67.7	40-125	WG490985
Benzo(k)fluoranthene	mg/kg	.033	0.0245	74.2	45-121	WG490985
Chrysene	mg/kg	.033	0.0266	80.5	35-135	WG490985
Dibenz(a,h)anthracene	mg/kg	.033	0.0226	68.5	41-124	WG490985
Fluoranthene	mg/kg	.033	0.0244	73.9	50-114	WG490985
Fluorene	mg/kg	.033	0.0239	72.4	49-109	WG490985
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0222	67.2	40-126	WG490985
Naphthalene	mg/kg	.033	0.0244	73.9	36-100	WG490985
Phenanthrene	mg/kg	.033	0.0239	72.3	46-108	WG490985
Pyrene	mg/kg	.033	0.0229	69.5	30-136	WG490985
2-Fluorobiphenyl				93.93	21-120	WG490985
Nitrobenzene-d5				81.37	33-114	WG490985
p-Terphenyl-d14				102.0	18-142	WG490985
Specific Conductance	umhos/cm	406	430.	106.	85-115	WG491172
Chromium,Hexavalent	mg/kg	100	95.5	95.5	50-143	WG491136
ORP	mV	229	220.	96.1	95.6-104.37	WG491167
Nickel	mg/kg	74.1	73.4	99.1	78.8-121.2	WG490955

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Benzene	mg/kg	0.0526	0.0535	105.	76-113	1.59	20	WG490720
Ethylbenzene	mg/kg	0.0535	0.0544	107.	78-115	1.62	20	WG490720
Toluene	mg/kg	0.0531	0.0541	106.	76-114	1.90	20	WG490720
Total Xylene	mg/kg	0.162	0.165	108.	81-118	1.86	20	WG490720
a,a,a-Trifluorotoluene(PID)				101.1	54-144			WG490720
TPH (GC/FID) Low Fraction	mg/kg	5.98	6.09	109.	67-135	1.84	20	WG490720
a,a,a-Trifluorotoluene(FID)				90.29	59-128			WG490720
TPH (GC/FID) High Fraction	ppm	48.3	51.1	80.0	50-150	5.68	25	WG490981
o-Terphenyl				93.98	50-150			WG490981

* Performance of this Analyte is outside of established criteria.
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Quality Assurance Report
Level II

L471053

August 04, 2010

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	RPD	Limit	Batch
pH	su	9.30	9.30	99.0	98.9-102.0	0	20	WG491011
1-Methylnaphthalene	mg/kg	0.0237	0.0251	72.0	41-110	5.77	24	WG490985
2-Chloronaphthalene	mg/kg	0.0240	0.0249	73.0	43-109	3.88	21	WG490985
2-Methylnaphthalene	mg/kg	0.0232	0.0237	70.0	38-104	2.06	24	WG490985
Acenaphthene	mg/kg	0.0217	0.0243	66.0	48-103	11.4	20	WG490985
Acenaphthylene	mg/kg	0.0205	0.0227	62.0	43-106	10.4	20	WG490985
Anthracene	mg/kg	0.0222	0.0237	67.0	51-110	6.60	22	WG490985
Benzo(a)anthracene	mg/kg	0.0215	0.0222	65.0	38-126	2.92	20	WG490985
Benzo(a)pyrene	mg/kg	0.0205	0.0222	62.0	47-118	8.09	20	WG490985
Benzo(b)fluoranthene	mg/kg	0.0209	0.0198	63.0	47-118	5.05	29	WG490985
Benzo(g,h,i)perylene	mg/kg	0.0213	0.0224	64.0	40-125	4.81	20	WG490985
Benzo(k)fluoranthene	mg/kg	0.0219	0.0245	66.0	45-121	11.0	31	WG490985
Chrysene	mg/kg	0.0232	0.0266	70.0	35-135	13.7	20	WG490985
Dibenz(a,h)anthracene	mg/kg	0.0212	0.0226	64.0	41-124	6.62	20	WG490985
Fluoranthene	mg/kg	0.0211	0.0244	64.0	50-114	14.3	20	WG490985
Fluorene	mg/kg	0.0221	0.0239	67.0	49-109	7.56	19	WG490985
Indeno(1,2,3-cd)pyrene	mg/kg	0.0209	0.0222	63.0	40-126	6.15	20	WG490985
Naphthalene	mg/kg	0.0228	0.0244	69.0	36-100	6.93	24	WG490985
Phenanthrene	mg/kg	0.0223	0.0239	67.0	46-108	6.97	21	WG490985
Pyrene	mg/kg	0.0234	0.0229	71.0	30-136	2.04	20	WG490985
2-Fluorobiphenyl				83.22	21-120			WG490985
Nitrobenzene-d5				75.22	33-114			WG490985
p-Terphenyl-d14				100.0	18-142			WG490985
Specific Conductance	umhos/	430.	430.	106.	85-115	0	20	WG491172
Chromium,Hexavalent	mg/kg	95.0	95.5	95.0	50-143	0.525	20	WG491136
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG491167

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Benzene	mg/kg	0.254	0	.05	102.	32-137	L470868-01	WG490720
Ethylbenzene	mg/kg	0.246	0	.05	98.3	10-150	L470868-01	WG490720
Toluene	mg/kg	0.256	0	.05	102.	20-142	L470868-01	WG490720
Total Xylene	mg/kg	0.757	0	.15	101.	16-141	L470868-01	WG490720
a,a,a-Trifluorotoluene(PID)					101.6	54-144		WG490720
TPH (GC/FID) Low Fraction	mg/kg	23.0	0	5.5	83.8	55-109	L470868-01	WG490720
a,a,a-Trifluorotoluene(FID)					92.75	59-128		WG490720
Arsenic	mg/kg	71.1	28.0	50	86.2	75-125	L471124-05	WG490955
Barium	mg/kg	146.	85.9	50	120.	75-125	L471124-05	WG490955
Cadmium	mg/kg	43.6	0	50	87.2	75-125	L471124-05	WG490955
Chromium	mg/kg	60.8	14.8	50	92.0	75-125	L471124-05	WG490955
Copper	mg/kg	81.0	30.7	50	101.	75-125	L471124-05	WG490955
Lead	mg/kg	122.	55.6	50	133.*	75-125	L471124-05	WG490955
Selenium	mg/kg	43.1	0	50	86.2	75-125	L471124-05	WG490955
Silver	mg/kg	48.4	0	50	96.8	75-125	L471124-05	WG490955
Zinc	mg/kg	140.	71.0	50	138.*	75-125	L471124-05	WG490955
Mercury	mg/kg	0.246	0.0250	.25	88.4	70-130	L471045-01	WG490972

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471053

August 04, 2010

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Chromium,Hexavalent	mg/kg	19.5	0	20	97.5	50-150	L471045-01	WG491136
Nickel	mg/kg	62.5	0	50	125.	75-125	L471124-05	WG490955

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Benzene	mg/kg	0.241	0.254	96.5	32-137	5.14	39	L470868-01	WG490720
Ethylbenzene	mg/kg	0.220	0.246	88.0	10-150	11.1	44	L470868-01	WG490720
Toluene	mg/kg	0.235	0.256	94.1	20-142	8.46	42	L470868-01	WG490720
Total Xylene	mg/kg	0.672	0.757	89.5	16-141	12.0	46	L470868-01	WG490720
a,a,a-Trifluorotoluene(PID)				100.9	54-144				WG490720
TPH (GC/FID) Low Fraction	mg/kg	18.6	23.0	67.8	55-109	21.1*	20	L470868-01	WG490720
a,a,a-Trifluorotoluene(FID)				93.60	59-128				WG490720
Arsenic	mg/kg	66.9	71.1	77.8	75-125	6.09	20	L471124-05	WG490955
Barium	mg/kg	140.	146.	108.	75-125	4.20	20	L471124-05	WG490955
Cadmium	mg/kg	41.9	43.6	83.8	75-125	3.98	20	L471124-05	WG490955
Chromium	mg/kg	59.0	60.8	88.4	75-125	3.01	20	L471124-05	WG490955
Copper	mg/kg	77.0	81.0	92.6	75-125	5.06	20	L471124-05	WG490955
Lead	mg/kg	121.	122.	131.*	75-125	0.823	20	L471124-05	WG490955
Selenium	mg/kg	41.9	43.1	83.8	75-125	2.82	20	L471124-05	WG490955
Silver	mg/kg	46.5	48.4	93.0	75-125	4.00	20	L471124-05	WG490955
Zinc	mg/kg	136.	140.	130.*	75-125	2.90	20	L471124-05	WG490955
Mercury	mg/kg	0.246	0.246	88.4	70-130	0	20	L471045-01	WG490972
Chromium,Hexavalent	mg/kg	18.3	19.5	91.5	50-150	6.35	20	L471045-01	WG491136
Nickel	mg/kg	64.5	62.5	129.*	75-125	3.15	20	L471124-05	WG490955

Batch number /Run number / Sample number cross reference

WG490720: R1304610: L471053-01
WG490981: R1306211: L471053-01
WG490955: R1306675: L471053-01
WG490972: R1307072: L471053-01
WG491011: R1307150: L471053-01
WG490985: R1307689: L471053-01
WG491167: R1310928: L471053-01
WG491172: R1310969: L471053-01
WG491136: R1311089: L471053-01
WG491239: R1312128: L471053-01

* * Calculations are performed prior to rounding of reported values .
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Quality Assurance Report
Level II

L471053

August 04, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.