March 21, 2024

Mr. Blair Rollins
Caerus Operating, LLC
143 Diamond Avenue
Parachute, CO 81635

via email

Subject: **C04-1C-4 Flowline Release**
Report of Work Completed
CECMC Facility ID: 311638
CECMC Release ID: 485888
Garfield County, Colorado

Mr. Rollins,

Entrada Consulting Group, Inc. (Entrada)was contracted by Caerus Operating, LLC (Caerus, Operator) to conduct site investigation and soil sampling activities at the C04 696 pad (Site) in response to a release from the flowline from the #MF01C-4 well (API #05-045-15766).

The Site is identified in the Colorado Energy and Carbon Management Commission (CECMC) database by Facility ID 311638. The release and response activities are documented under CECMC Release ID 485888.

SITE DESCRIPTION AND PATHWAY TO GROUNDWATER INVESTIGATION

A Pathway to Groundwater Investigation report (Doc #403715134) was included as an attachment to the Form 19 Supplemental (Doc #403715130) submitted on March 12, 2024, including a requested to evaluate all cleanup confirmation soil samples under CECMC Table 915-1 Residential Soil Screening Level (RSSL) concentrations. The Form 19 and request to proceed under RSSLs was conditionally approved on March 12, 2024.

RELEASE INVESTIGATION AND SOIL SAMPLING

An Entrada representative was on site on January 26, 2024, to field screen and collect soil samples from the initial excavation at the flowline point of release (POR). All work to excavate and identify the POR was completed prior to arrival.

The excavation was located on the north side of the eastern-most separator and measured approximately 30 feet in length north to south by 20 feet in width east to west by 6 feet in depth.

Prior to sampling, the excavation sidewalls and base were inspected for evidence of potential environmental impacts (e.g. staining, hydrocarbon odor) and field-screened for volatile organic

compounds (VOCs) with a handheld photoionization detector (PID) equipped with a 10.6 eV lamp. Soil samples were collected in a resealable plastic bag and allowed to warm briefly before the VOC concentration was read from the air in the headspace of the bag.

The highest VOC concentration observed in the excavation was 269.4 parts per million (ppm) from soil collected from 6 feet below ground surface (ft-bgs) directly beneath the POR. One sample, 20240126-C04 696-(POR)@6, was collected from this location for release characterization.

Entrada returned to the site on February 19, 2024, after repairs to the flowline had been completed, to oversee additional excavation to remove impact soil and collect clearance soil samples. One sample was collected from each sidewall: 20240219-C04 696-(NW)@4 from the north wall at 4 ft-bgs, 20240219-C04 696-(EW)@4 from the east wall at 4 ft-bgs, 20240219-C04 696-(SW)@5 from the south wall at 5 ft-bgs, and 20240219-C04 696-(WW)@4 from the west wall at 4 ft-bgs. A hydraulic excavation truck was used to remove four (4) feet of impacted soil from the base of the excavation beneath the POR. One sample, 20240219-C04 696-(POR)@10, was collected at 10 ft-bgs for vertical clearance confirmation with a VOC concentration of 76.83 ppm.

All soil samples were collected in 9 oz glass jars, sealed, labeled, placed into an ice-filled cooler for preservation, and submitted to Pace Analytical in Mt. Juliet, TN to be analyzed for the following:

- Total Petroleum Hydrocarbons – diesel range organics (TPH-DRO [C10-C28]) and Total Petroleum Hydrocarbons – oil range organics (TPH-ORO [C28-C36]) by U.S. Environmental Protection Agency (EPA) Method 8015M
- TPH – gasoline range organics (TPH-GRO [C6-C10]) by EPA Method 8015D/GRO
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene by EPA Method 8260B
- Polycyclic aromatic Hydrocarbons (PAHs) (CECMC Table 915-1) by EPA Method 8270C-SIM
- Electrical Conductivity (EC) by EPA Method 9050AMod
- Sodium adsorption ratio (SAR) by USDA Method H60
- pH by EPA Method 9045D
- Metals (CECMC Table 915-1) by EPA Method 6010B
    - Hot-water soluble Boron by EPA Method 6010B-NE493, Ch 2
    - Arsenic by EPA Method 6020
    - Hexavalent chromium by EPA Method 7199A

Laboratory analytical results showed SAR in exceedance of the CECMC Table 915-1 maximum in the base sample, 20240219-C04 696-(POR)@10. An additional two (2) feet of soil was removed via hydraulic excavation truck from the base of the excavation beneath the POR and a new vertical clearance sample, 20240313-C04 696-(POR)@12, was collected as described above. The sample was submitted to Pace Analytical in Mt. Juliet, TN to be analyzed for the following reduced analyte suite per Form 19 Supplemental (Doc #403715130) approved on March 12, 2024:

- Sodium Adsorption Ratio (SAR) by USDA Method H60
- pH by EPA Method 9045D
- Arsenic by EPA Method 6020

BACKGROUND SOIL SAMPLES

Three (3) site-specific background soil samples were collected on January 26, 2024, from native, undisturbed soil to the north-west, west, and south of the Site at 1 ft-bgs.

Background soil samples were collected in 9 oz glass jars, sealed, labeled, placed into an ice-filled cooler for preservation, and submitted to Pace Analytical in Mt. Juliet, TN to be analyzed for the following:

- Electrical Conductivity (EC) by EPA Method 9050AMod
- Sodium adsorption ratio (SAR) by USDA Method H60
- pH by EPA Method 9045D
- Metals (CECMC Table 915-1) by EPA Method 6010B
    - Hot-water soluble Boron by EPA Method 6010B-NE493, Ch 2
    - Arsenic by EPA Method 6020
    - Hexavalent chromium by EPA Method 7199A

SOIL ANALYTICAL RESULTS

Analytical results for the seven (7) excavation soil samples and three (3) background soil samples are presented in **Tables 1 and 2** along with CECMC Table 915-1 Cleanup Concentrations, RSSL concentrations, and Soil Suitability for Reclamation (SSR) standards for comparison. Results in exceedance of these standards are summarized below:

- TPH-GRO was reported in exceedance of the Cleanup Concentration of 500 milligrams per kilogram (mg/kg) in the initial release characterization sample 20240126-C04 696-(POR)@6 at 671 mg/kg.
- TPH-ORO was reported in exceedance of the Cleanup Concentration of 500 mg/kg in the initial release characterization sample 20240126-C04 696-(POR)@6 at 1230 mg/kg.
- Benzene was reported in exceedance of the RSSL Concentration of 1.2 mg/kg in the initial release characterization sample 20240126-C04 696-(POR)@6 at 2.11 mg/kg.
- Naphthalene was reported in exceedance of the RSSL Concentration of 2.0 mg/kg in the initial release characterization sample 20240126-C04 696-(POR)@6 at 4.37 mg/kg.
- Sodium Adsorption Ratio (SAR) was reported above the SSR limit of 6 in sample 20240219-C04 696-(POR)@10 at 8.58.
- pH was reported slightly above the SSR maximum of 8.3 in five (5) samples, ranging from 8.32 to 8.63.
- Arsenic was reported in exceedance of the RSSL concentration of 0.68 mg/kg in all samples, ranging from 7.11 to 20.5 mg/kg.
- Hexavalent chromium was not detected above the laboratory reportable detection limit (RDL) of 1.00 mg/kg in any soil samples. The RSSL concentration is 0.3 mg/kg.

All remaining soil analytical results were below applicable CECMC Table 915-1 standards. Laboratory analytical reports and chain-of-custody documentation are included as Attachments.

CONCLUSIONS AND RECOMMENDATIONS

Laboratory analysis of soil samples from the release cleanup excavation reported exceedances in TPH-GRO, TPH-DRO, benzene, naphthalene, SAR, pH, arsenic, and hexavalent chromium.

All detections of TPH-GRO, TPH-DRO, benzene, and naphthalene were reported in the initial release characterization sample and were addressed by the removal of impacted soil. The SAR exceedance reported in 20240219-C04 696-(POR)@10 was also resolved through additional excavation.

Hexavalent chromium was not detected in any soil samples above the laboratory RDL of 1.00 mg/kg, which is above the RSSL concentration of 0.3 mg/kg. Entrada requests that CECMC Table 915-1 Footnote 9 be applied to adjust the cleanup threshold for hexavalent chromium to the laboratory RDL.

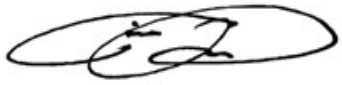
It is understood by the Operator that the most likely source for elevated arsenic and pH levels in soil in the vicinity of the flowline release would be the produced fluid. Laboratory analysis of a representative sample of produced fluid collected from the C04 696 1-C separator reported a pH value of 6.48 and an arsenic concentration below the laboratory RDL of 1.00 mg/L. Based on these results, the elevated arsenic and pH levels reported above are more likely representative of naturally occurring soil composition and not related to the flowline release. A Statement of Operator Knowledge with the produced fluid laboratory analytical report are included as an **Attachment**.

Based on field observations and soil analytical results presented herein, Entrada recommends that Caerus pursue closure of release number 485888 with the CECMC.

We appreciate the opportunity to assist Caerus Operating, LLC. Please contact us at (970) 270-2986 if you have any questions.

Sincerely,

ENTRADA CONSULTING GROUP



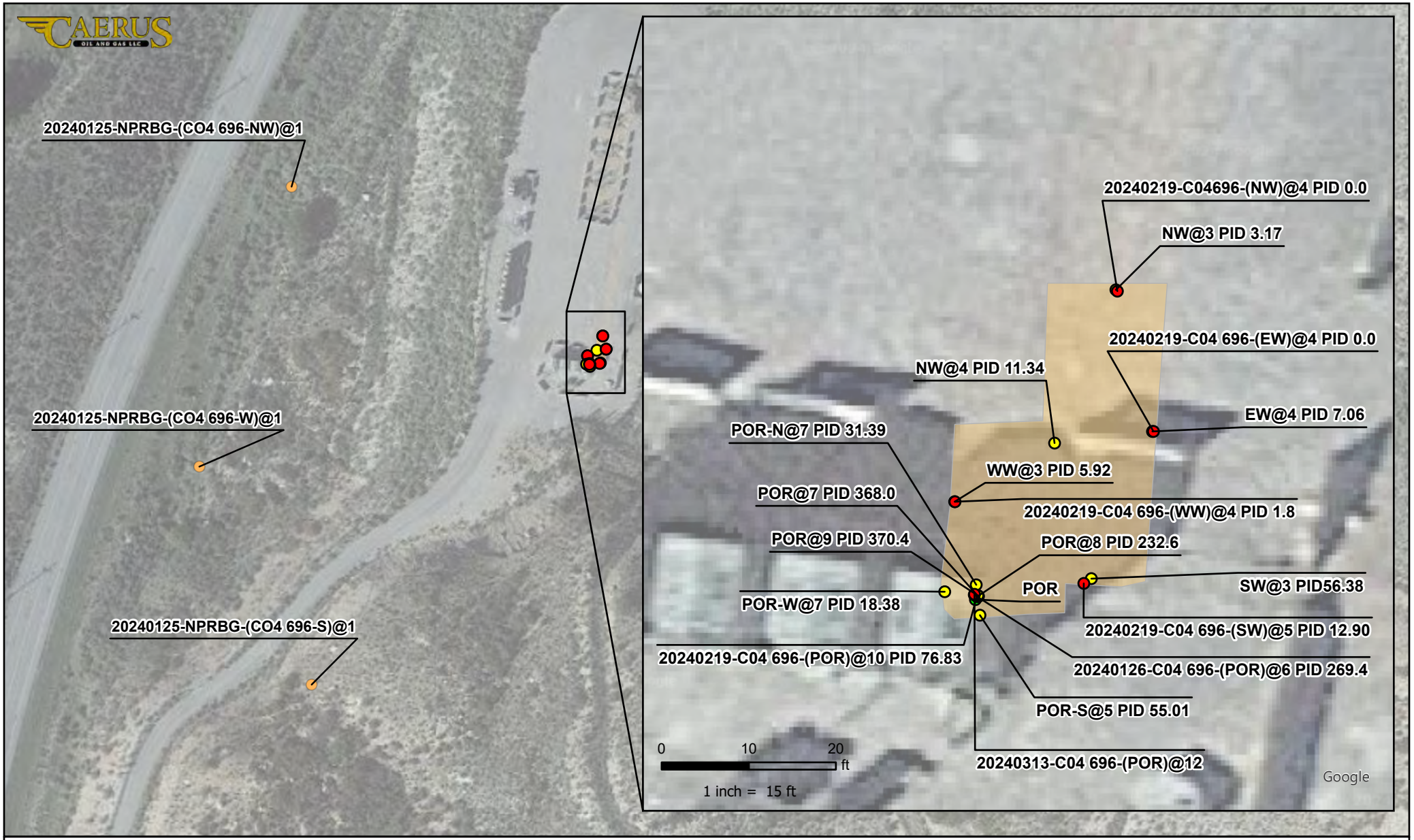
Christopher Mace
Senior Geologist

Tim Dobransky
Principal Scientist

Attachments:

Figure 1 – Site Diagram
Table 1 – Soil Analytical Results – Organic
Table 2 – Soil Analytical Results – Inorganic
Photographic Log
Soil Laboratory Analytical Reports
Statement of Operator Knowledge

FIGURES



LEGEND

- Background Sample
- Soil Sample Location
- FL Excavation
- Spill Origin

0 160 320 ft

1 inch = 160 ft

N W E S

Project No:	024-004
Map By:	RRM
Date:	3/21/2024

CO4 696 FL Release
Caerus Oil and Gas LLC
NENW, Section 4, T6S R96W, 6th PM
Garfield County, Colorado

ENTRADA CONSULTING GROUP
330 Grand Avenue, Unit C
Grand Junction, CO 81501
970-579-1015

Figure 1

TABLES

TABLE 1

C04 696
CAERUS OPERATING, LLC
GARFIELD COUNTY, CO

CECMC TABLE 915-1 RESIDENTIAL SOIL SCREENING LEVEL
SOIL ANALYTICAL RESULTS - ORGANIC

ANALYTE			GRO	ORO	DRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,2,4-TMB	1,3,5-TMB	Acenaphthene	Anthracene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Chrysene	Dibenz(a,h)anthracen	Fluoranthene	Fluorene	Indeno(1,2,3-cd)Pyre	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Pyrene
915-1 PROTECTION OF GW			500	500	500	0.0026	0.69	0.78	9.9	0.0081	0.0087	0.55	5.8	0.011	0.3	2.9	0.24	9	0.096	5.9	0.54	0.98	0.006	0.019	0.0038	1.3
915-1 RESIDENTIAL SOIL			500	500	500	1.2	490	5.8	58	30	27	360	1800	1.1	1.1	11	0.11	110	0.11	240	240	1.1	18	24	2	180
UNITS			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Name	**Sample Date**	**Sample Type**																								
20240126-C04 696-(POR)@6	2024-01-26	Excavation	**671**	**1230**	<12.0	**2.11**	25.1	2.75	42.8	11.5	12	<0.00600	<0.00600	<0.00600	0.0176	<0.00600	<0.00600	0.00682	<0.00600	0.00894	0.338	0.0082	2.57	8.58	**4.37**	0.00731
20240219-C04 696-(EW)@4	2024-02-19	Excavation	0.381	37.9	92.6	0.00492	0.0211	<0.00250	0.0187	<0.00500	0.00742	<0.00600	<0.00600	<0.00600	0.0176	<0.00600	<0.00600	0.00747	<0.00600	0.00613	<0.00600	0.00637	<0.0200	0.0296	<0.0200	<0.00600
20240219-C04 696-(NW)@4	2024-02-19	Excavation	0.28	29	103	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<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	<0.00600
20240219-C04 696-(POR)@10	2024-02-19	Excavation	2.46	8.73	18.9	0.00823	0.0998	0.031	0.393	0.21	0.256	<0.00600	<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	<0.00600
20240219-C04 696-(SW)@5	2024-02-19	Excavation	0.563	9.48	12.5	0.00448	0.0354	0.0065	0.26	0.0394	0.107	<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
20240219-C04 696-(WW)@4	2024-02-19	Excavation	0.599	51.7	114	0.00623	0.0427	0.00613	0.166	0.0563	0.175	<0.00600	<0.00600	0.00848	0.0346	0.0079	0.00928	0.0121	<0.00600	0.0103	<0.00600	0.0144	0.0237	0.0515	0.035	<0.00600

Notes:
Bold with silver highlight: Exceeds RSSLs
Bold with blue highlight: Exceeds POGs
"<" (as in, less than laboratory reporting detection limit)

TABLE 2

C04 696
CAERUS OPERATING, LLC
GARFIELD COUNTY, CO

CECMC TABLE 915-1 RESIDENTIAL SOIL SCREENING LEVEL
SOIL ANALYTICAL RESULTS - INORGANIC

ANALYTE			EC	SAR	pH	Boron	Arsenic	Barium	Cadmium	Chromium VI	Copper	Lead	Nickel	Selenium	Silver	Zinc
915-1 PROTECTION OF GW			4	6	8.3	2	0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
915-1 RESIDENTIAL SOIL			4	6	8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
UNITS			mmhos/cm	No Unit	SU	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Name	**Sample Date**	**Sample Type**														
20240126-C04 696-(POR)@6	2024-01-26	Excavation	2.47	4.93	7.64	1.11	**7.11**	1560	<1.00	**<1.00**	11.7	7.67	8	<2.50	<0.500	29.6
20240126-NPRBG-(C04 696-NW)@1	2024-01-26	Background	0.489	0.595	7.72	0.495	**17.7**	632	<1.00	**<1.00**	18.6	12	12.9	<2.50	<0.500	50
20240126-NPRBG-(C04 696-S)@1	2024-01-26	Background	0.257	0.0984	7.59	0.619	**4.51**	159	<1.00	**<1.00**	10.3	9.19	8.29	<2.50	<0.500	38.3
20240126-NPRBG-(C04 696-W)@1	2024-01-26	Background	0.334	0.298	7.7	0.565	**9.19**	236	<1.00	**<1.00**	13.6	10.3	10.4	<2.50	<0.500	42.1
20240219-C04 696-(EW)@4	2024-02-19	Excavation	0.282	0.593	**8.6**	0.31	**12.3**	1500	<1.00	**<1.00**	16.6	11.1	12.3	<2.50	<0.500	46.1
20240219-C04 696-(NW)@4	2024-02-19	Excavation	0.284	0.641	**8.62**	0.63	**20.5**	553	<1.00	**<1.00**	22.3	14.7	15.9	<2.50	<0.500	53.4
20240219-C04 696-(POR)@10	2024-02-19	Excavation	2.92	**8.58**	**8.32**	1.3	**8.93**	214	<1.00	**<1.00**	14.8	9.95	12.7	<2.50	<0.500	50.8
20240219-C04 696-(SW)@5	2024-02-19	Excavation	0.246	0.54	**8.63**	0.745	**12.1**	1990	<1.00	**<1.00**	18.4	10.6	12.6	<2.50	<0.500	43.5
20240219-C04 696-(WW)@4	2024-02-19	Excavation	0.348	0.625	**8.61**	0.741	**11.7**	2110	<1.00	**<1.00**	18.8	12.5	13	<2.50	<0.500	47.1
20240313-C04 696-(POR)@12	2024-03-13	Excavation	NT	3.63	7.62	NT	**14.8**	NT	NT	NT	NT	NT	NT	NT	NT	NT

Notes:
Bold with silver highlight: Exceeds RSSLs
Bold with blue highlight: Exceeds POGs
"<" (as in, less than laboratory reporting detection limit)

PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG

Site:	Project:	Project Number:
C04 696	C04 1C-4 Flowline Release	024-004

Date:
2024-01-26

Description:
Initial excavation. View from northeast to southwest.

Date:
2023-01-26

Description:
View of point of release.

PHOTOGRAPHIC LOG

Site:	Project:	Project Number:
C04 696	C04 1C-4 Flowline Release	024-004

Date:
2024-02-19

Description:
View after additional excavation at the POR.

Date:
2023-02-19

Description:
View after additional excavation at the POR.

PHOTOGRAPHIC LOG

Site:	Project:	Project Number:
C04 696	C04 1C-4 Flowline Release	024-004

Date:
2024-02-19

Description:
View of excavation from northeast facing southwest.

Date:
2023-03-13

Description:
View after additional excavation at the POR.

SOIL

LABORATORY ANALYTICAL REPORTS

ANALYTICAL REPORT

February 06, 2024

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

Caerus Oil and Gas

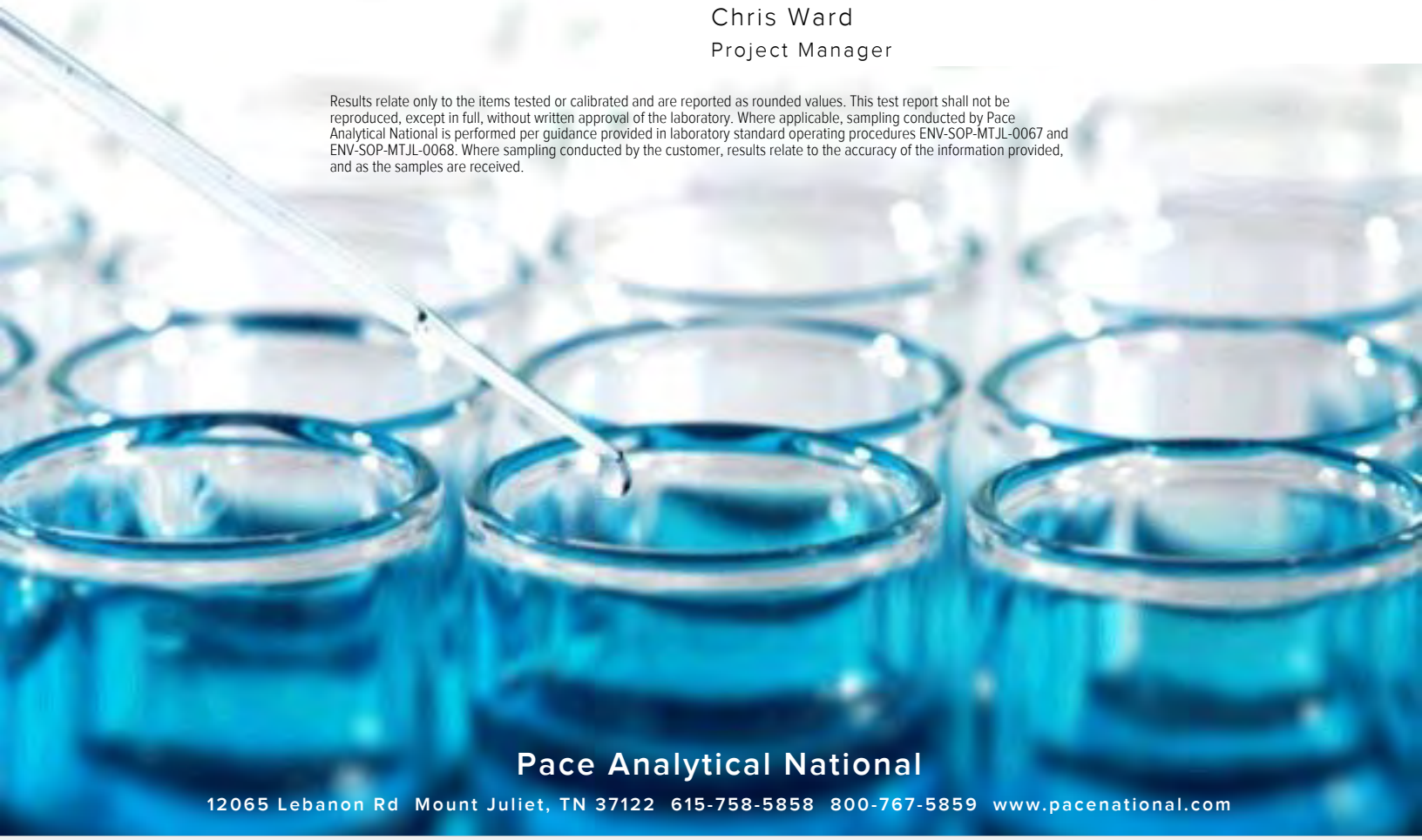
Sample Delivery Group:	L1699699
Samples Received:	01/27/2024
Project Number:	
Description:	NPR C04 696 Flowline Release

Report To:

Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

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

20240126-C04 696-(POR)@6 L1699699-01 Solid

Collected by: B. Abeyta
Collected date/time: 01/26/24 13:20
Received date/time: 01/27/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2216911	1	02/01/24 17:13	02/01/24 17:13	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2215117	1	01/31/24 03:34	01/31/24 14:51	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2216217	1	01/30/24 14:19	01/31/24 16:30	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2215287	1	01/29/24 09:17	02/04/24 18:00	EPW	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2216913	1	02/01/24 12:54	02/01/24 22:07	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2214814	5	01/29/24 08:49	01/29/24 16:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2218097	100	01/31/24 09:44	02/01/24 21:54	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2218071	10	01/31/24 09:44	02/01/24 18:49	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2218988	40	01/31/24 09:44	02/03/24 21:26	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2217054	3	01/31/24 19:06	02/01/24 08:57	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2217054	5	01/31/24 19:06	02/01/24 09:41	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2214950	1	01/29/24 18:59	01/30/24 02:12	AGW	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2214950	20	01/29/24 18:59	02/03/24 07:45	MKM	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.93		1	02/01/2024 17:13	WG2216911

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	01/31/2024 14:51	WG2215117

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	7.64	T8	1	01/31/2024 16:30	WG2216217

Sample Narrative:
L1699699-01 WG2216217: 7.64 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2470		10.0	1	02/04/2024 18:00	WG2215287

Sample Narrative:
L1699699-01 WG2215287: at 25C

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	1.11		0.200	1	02/01/2024 22:07	WG2216913

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.11		1.00	5	01/29/2024 16:40	WG2214814
Barium	1560		2.50	5	01/29/2024 16:40	WG2214814
Cadmium	ND		1.00	5	01/29/2024 16:40	WG2214814
Copper	11.7		5.00	5	01/29/2024 16:40	WG2214814
Lead	7.67		2.00	5	01/29/2024 16:40	WG2214814
Nickel	8.00		2.50	5	01/29/2024 16:40	WG2214814
Selenium	ND		2.50	5	01/29/2024 16:40	WG2214814
Silver	ND		0.500	5	01/29/2024 16:40	WG2214814
Zinc	29.6		25.0	5	01/29/2024 16:40	WG2214814

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	671		10.0	100	02/01/2024 21:54	WG2218097
(S) a,a,a-Trifluorotoluene(FID)	*89.2*		*77.0-120*		*02/01/2024 21:54*	WG2218097

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	2.11		0.0100	10	02/01/2024 18:49	WG2218071
Toluene	25.1		0.200	40	02/03/2024 21:26	WG2218988
Ethylbenzene	2.75		0.0250	10	02/01/2024 18:49	WG2218071
Xylenes, Total	42.8		0.0650	10	02/01/2024 18:49	WG2218071
1,2,4-Trimethylbenzene	11.5		0.0500	10	02/01/2024 18:49	WG2218071
1,3,5-Trimethylbenzene	12.0		0.0500	10	02/01/2024 18:49	WG2218071
(S) Toluene-d8	*101*		*75.0-131*		*02/01/2024 18:49*	WG2218071
(S) Toluene-d8	*96.1*		*75.0-131*		*02/03/2024 21:26*	WG2218988
(S) 4-Bromofluorobenzene	*99.6*		*67.0-138*		*02/01/2024 18:49*	WG2218071
(S) 4-Bromofluorobenzene	*106*		*67.0-138*		*02/03/2024 21:26*	WG2218988
(S) 1,2-Dichloroethane-d4	*116*		*70.0-130*		*02/01/2024 18:49*	WG2218071
(S) 1,2-Dichloroethane-d4	*96.8*		*70.0-130*		*02/03/2024 21:26*	WG2218988

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	1230		20.0	5	02/01/2024 09:41	WG2217054
C28-C36 Motor Oil Range	ND		12.0	3	02/01/2024 08:57	WG2217054
(S) o-Terphenyl	*52.3*		*18.0-148*		*02/01/2024 08:57*	WG2217054
(S) o-Terphenyl	*53.1*		*18.0-148*		*02/01/2024 09:41*	WG2217054

Sample Narrative:

L1699699-01 WG2217054: 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	01/30/2024 02:12	WG2214950
Anthracene	ND		0.00600	1	01/30/2024 02:12	WG2214950
Benzo(a)anthracene	ND		0.00600	1	01/30/2024 02:12	WG2214950
Benzo(b)fluoranthene	0.0176		0.00600	1	01/30/2024 02:12	WG2214950
Benzo(k)fluoranthene	ND		0.00600	1	01/30/2024 02:12	WG2214950
Benzo(a)pyrene	ND		0.00600	1	01/30/2024 02:12	WG2214950
Chrysene	0.00682		0.00600	1	01/30/2024 02:12	WG2214950
Dibenz(a,h)anthracene	ND		0.00600	1	01/30/2024 02:12	WG2214950
Fluoranthene	0.00894		0.00600	1	01/30/2024 02:12	WG2214950
Fluorene	0.338	J4	0.00600	1	01/30/2024 02:12	WG2214950
Indeno(1,2,3-cd)pyrene	0.00820		0.00600	1	01/30/2024 02:12	WG2214950
1-Methylnaphthalene	2.57		0.400	20	02/03/2024 07:45	WG2214950
2-Methylnaphthalene	8.58		0.400	20	02/03/2024 07:45	WG2214950
Naphthalene	4.37		0.400	20	02/03/2024 07:45	WG2214950
Pyrene	0.00731		0.00600	1	01/30/2024 02:12	WG2214950
(S) p-Terphenyl-d14	*84.1*		*23.0-120*		*01/30/2024 02:12*	WG2214950
(S) p-Terphenyl-d14	*100*	J7	*23.0-120*		*02/03/2024 07:45*	WG2214950
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*01/30/2024 02:12*	WG2214950
(S) Nitrobenzene-d5	*0.000*	J7	*14.0-149*		*02/03/2024 07:45*	WG2214950
(S) 2-Fluorobiphenyl	*138*	J1	*34.0-125*		*01/30/2024 02:12*	WG2214950
(S) 2-Fluorobiphenyl	*119*	J7	*34.0-125*		*02/03/2024 07:45*	WG2214950

Sample Narrative:

L1699699-01 WG2214950: Surrogate failure due to matrix interference.

L1699699-01 WG2214950: Dilution and surrogate failure due to matrix interference.

Method Blank (MB)

(MB) R4028405-1 01/31/24 12:39

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

L1699588-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1699588-01 01/31/24 14:26 • (DUP) R4028405-11 01/31/24 14:32

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

L1699701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1699701-01 01/31/24 15:28 • (DUP) R4028405-12 01/31/24 15:34

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) R4028405-2 01/31/24 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	11.0	110	80.0-120	

L1699583-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699583-01 01/31/24 12:53 • (MS) R4028405-3 01/31/24 12:59 • (MSD) R4028405-4 01/31/24 13:06

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	19.1	23.1	95.4	115	1	75.0-125			19.0	20

L1699583-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699583-04 01/31/24 13:37 • (MS) R4028405-7 01/31/24 13:55 • (MSD) R4028405-8 01/31/24 14:01

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	22.9	21.9	115	110	1	75.0-125			4.51	20

L1699583-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1699583-01 01/31/24 12:53 • (MS) R4028405-5 01/31/24 13:12

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	638	ND	782	123	50	75.0-125	

L1699583-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1699583-04 01/31/24 13:37 • (MS) R4028405-9 01/31/24 14:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	643	ND	687	107	50	75.0-125	

L1699585-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1699585-02 01/31/24 16:30 • (DUP) R4028423-2 01/31/24 16:30

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	8.10	8.08	1	0.247		1

Sample Narrative:

OS: 8.1 at 19.7C

DUP: 8.08 at 19.7C

L1699701-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1699701-03 01/31/24 16:30 • (DUP) R4028423-3 01/31/24 16:30

Analyte	Original Result pH	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.77	7.78	1	0.129		1

Sample Narrative:

OS: 7.77 at 19.7C

DUP: 7.78 at 19.7C

Laboratory Control Sample (LCS)

(LCS) R4028423-1 01/31/24 16:30

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

Sample Narrative:

LCS: 10 at 19.4C

Method Blank (MB)

(MB) R4029645-1 02/04/24 18:00

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

L1699700-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1699700-01 02/04/24 18:00 • (DUP) R4029645-3 02/04/24 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	257	257	1	0.0390		20

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

L1699711-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1699711-03 02/04/24 18:00 • (DUP) R4029645-4 02/04/24 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	448	447	1	0.223		20

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

Laboratory Control Sample (LCS)

(LCS) R4029645-2 02/04/24 18:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	331	101	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R4029052-1 02/01/24 21:53

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) R4029052-2 02/01/24 21:56 • (LCSD) R4029052-3 02/01/24 21:58

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	1.06	1.08	106	108	80.0-120			2.29	20

Method Blank (MB)

(MB) R4027382-1 01/29/24 15:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R4027382-2 01/29/24 15:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.6	93.6	80.0-120	
Barium	100	89.5	89.5	80.0-120	
Cadmium	100	98.0	98.0	80.0-120	
Copper	100	92.9	92.9	80.0-120	
Lead	100	94.5	94.5	80.0-120	
Nickel	100	97.2	97.2	80.0-120	
Selenium	100	95.3	95.3	80.0-120	
Silver	20.0	18.8	94.1	80.0-120	
Zinc	100	93.4	93.4	80.0-120	

L1699536-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699536-01 01/29/24 16:03 • (MS) R4027382-5 01/29/24 16:12 • (MSD) R4027382-6 01/29/24 16:16

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	7.65	95.2	91.4	87.5	83.8	5	75.0-125			4.04	20
Barium	100	41.4	124	122	82.2	80.6	5	75.0-125			1.30	20
Cadmium	100	ND	94.2	90.3	94.2	90.3	5	75.0-125			4.17	20
Copper	100	10.3	96.7	91.4	86.4	81.1	5	75.0-125			5.57	20
Lead	100	13.6	99.2	93.5	85.6	80.0	5	75.0-125			5.86	20
Nickel	100	8.45	99.5	95.6	91.0	87.1	5	75.0-125			3.98	20
Selenium	100	ND	92.8	85.1	92.3	84.6	5	75.0-125			8.67	20
Silver	20.0	ND	18.2	17.6	91.0	88.2	5	75.0-125			3.13	20
Zinc	100	28.2	116	109	87.3	81.1	5	75.0-125			5.46	20

Method Blank (MB)

(MB) R4028931-3 02/01/24 12:22

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)	*93.6*			*77.0-120*

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

(LCS) R4028931-1 02/01/24 11:04 • (LCSD) R4028931-2 02/01/24 11:24

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 %
TPH (GC/FID) Low Fraction	5.50	5.48	5.60	99.6	102	72.0-127			2.17	20
(S) a,a,a-Trifluorotoluene(FID)				*99.8*	*103*	*77.0-120*				

L1699740-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699740-01 02/01/24 19:00 • (MS) R4028931-4 02/01/24 22:13 • (MSD) R4028931-5 02/01/24 22:32

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	147	ND	138	112	105	85.5	25	10.0-151			20.8	28
(S) a,a,a-Trifluorotoluene(FID)					*101*	*102*		*77.0-120*				

Method Blank (MB)

(MB) R4029289-3 02/01/24 10:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
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	*105*			*75.0-131*
(S) 4-Bromofluorobenzene	*99.1*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*119*			*70.0-130*

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

(LCS) R4029289-1 02/01/24 09:19 • (LCSD) R4029289-2 02/01/24 09:37

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	0.128	0.132	102	106	70.0-123			3.08	20
Ethylbenzene	0.125	0.127	0.133	102	106	74.0-126			4.62	20
Xylenes, Total	0.375	0.376	0.375	100	100	72.0-127			0.266	20
1,2,4-Trimethylbenzene	0.125	0.110	0.112	88.0	89.6	70.0-126			1.80	20
1,3,5-Trimethylbenzene	0.125	0.117	0.118	93.6	94.4	73.0-127			0.851	20
(S) Toluene-d8				*103*	*105*	*75.0-131*				
(S) 4-Bromofluorobenzene				*102*	*103*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*119*	*117*	*70.0-130*				

Method Blank (MB)

(MB) R4029919-3 02/03/24 12:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00130	0.00500
(S) Toluene-d8	*97.6*			*75.0-131*
(S) 4-Bromofluorobenzene	*92.3*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*93.4*			*70.0-130*

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

(LCS) R4029919-1 02/03/24 10:29 • (LCSD) R4029919-2 02/03/24 10:48

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 %
Toluene	0.125	0.110	0.110	88.0	88.0	75.0-121			0.000	20
(S) Toluene-d8				*96.1*	*92.9*	*75.0-131*				
(S) 4-Bromofluorobenzene				*98.2*	*100*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*95.9*	*93.5*	*70.0-130*				

Method Blank (MB)

(MB) R4028572-1 02/01/24 01:31

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	0.530	J	0.274	4.00
(S) o-Terphenyl	*59.5*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R4028572-2 02/01/24 01:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	36.0	72.0	50.0-150	
(S) o-Terphenyl			*57.8*	*18.0-148*	

L1699697-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699697-02 02/01/24 02:41 • (MS) R4028572-3 02/01/24 02:56 • (MSD) R4028572-4 02/01/24 03:10

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	50.1	ND	42.1	35.3	80.2	67.0	1	50.0-150			17.6	20
(S) o-Terphenyl					*53.3*	*50.8*		*18.0-148*				

Method Blank (MB)

(MB) R4029355-2 01/30/24 00:08

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	*89.3*			*23.0-120*
(S) Nitrobenzene-d5	*120*			*14.0-149*
(S) 2-Fluorobiphenyl	*92.8*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R4029355-1 01/29/24 23:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0862	108	50.0-120	
Anthracene	0.0800	0.0849	106	50.0-126	
Benzo(a)anthracene	0.0800	0.0864	108	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0832	104	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0797	99.6	49.0-125	
Benzo(a)pyrene	0.0800	0.0740	92.5	42.0-120	
Chrysene	0.0800	0.0880	110	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0807	101	47.0-125	
Fluoranthene	0.0800	0.0873	109	49.0-129	
Fluorene	0.0800	0.101	126	49.0-120	J4
Indeno(1,2,3-cd)pyrene	0.0800	0.0829	104	46.0-125	
1-Methylnaphthalene	0.0800	0.0925	116	51.0-121	
2-Methylnaphthalene	0.0800	0.0951	119	50.0-120	
Naphthalene	0.0800	0.0869	109	50.0-120	
Pyrene	0.0800	0.0841	105	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R4029355-1 01/29/24 23:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*115*	*23.0-120*	
(S) Nitrobenzene-d5			*171*	*14.0-149*	J1
(S) 2-Fluorobiphenyl			*124*	*34.0-125*	

L1699701-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699701-04 01/30/24 03:23 • (MS) R4029355-3 01/30/24 03:40 • (MSD) R4029355-4 01/30/24 03:58

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	0.158	ND	0.141	0.0637	89.2	80.4	1	14.0-127		J3	75.5	27
Anthracene	0.158	ND	0.152	0.0684	96.2	86.4	1	10.0-145		J3	75.9	30
Benzo(a)anthracene	0.158	ND	0.154	0.0709	97.5	89.5	1	10.0-139		J3	73.9	30
Benzo(b)fluoranthene	0.158	ND	0.141	0.0635	89.2	80.2	1	10.0-140		J3	75.8	36
Benzo(k)fluoranthene	0.158	ND	0.130	0.0598	82.3	75.5	1	10.0-137		J3	74.0	31
Benzo(a)pyrene	0.158	ND	0.144	0.0656	91.1	82.8	1	10.0-141		J3	74.8	31
Chrysene	0.158	ND	0.137	0.0656	86.7	82.8	1	10.0-145		J3	70.5	30
Dibenz(a,h)anthracene	0.158	ND	0.140	0.0631	88.6	79.7	1	10.0-132		J3	75.7	31
Fluoranthene	0.158	ND	0.153	0.0718	96.8	90.7	1	10.0-153		J3	72.2	33
Fluorene	0.158	ND	0.165	0.0759	104	95.8	1	11.0-130		J3	74.0	29
Indeno(1,2,3-cd)pyrene	0.158	ND	0.145	0.0648	91.8	81.8	1	10.0-137		J3	76.5	32
1-Methylnaphthalene	0.158	ND	0.155	0.0770	94.4	89.9	1	10.0-142		J3	67.2	28
2-Methylnaphthalene	0.158	ND	0.162	0.0813	95.5	88.6	1	10.0-137		J3	66.3	28
Naphthalene	0.158	ND	0.146	0.0708	89.0	82.6	1	10.0-135		J3	69.4	27
Pyrene	0.158	ND	0.132	0.0625	83.5	78.9	1	10.0-148		J3	71.5	35
(S) p-Terphenyl-d14					*83.2*	*75.9*		*23.0-120*				
(S) Nitrobenzene-d5					*136*	*118*		*14.0-149*				
(S) 2-Fluorobiphenyl					*94.5*	*81.4*		*34.0-125*				

Sample Narrative:

MSD: RPD failures due to double spike added to MS by mistake.

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
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
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.
J4	The associated batch QC was outside the established quality control range for accuracy.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.

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.

Company Name/Address:	Billing Information:	Pres Chk
Caerus Oil & Gas 143 Diamond Ave Parachute,CO 81635	Same as left.	
Report to: Blair Rollins	Email To: brollins@caerusoilandgas.com	
Project Description: NPR C04 696 Flowline Release	City/State Collected: CO	Please Circle: PT MT CT ET
Phone: (970) 640-6919	Client Project #	Lab Project #
Collected by (print): B. Abeyta	Site/Facility ID #	P.O. #
Collected by (signature): Immediately Packed on Ice N ___ Y X	***Rush?*** (Lab MUST Be Notified) ___ Same Day X Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day	**Quote #** Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TABLE 915 GRO/DRO/ORO	TABLE 915 Metals	TABLE 915 VOCs	TABLE 915 pH, SPCON, SAR	TABLE 915 PAHs	Remarks	Sample # (lab only)
20240126-C04 696-(POR)@6	Grab	SS	6	01/26/2024	1320	4	X	X	X	X	X		-01

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

SDG # 169699
C225

Acctnum:
Template:
Prelogin:
PM:
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 5882 7564 8030

Sample Receipt Checklist

COC Seal Present/Intact:	__NP	Y / N
COC Signed/Accurate:		Y / N
Bottles arrive intact:		Y / N
Correct bottles used:		Y / N
Sufficient volume sent:		Y / N
If Applicable		
VOA Zero Headspace:		Y / N
Preservation Correct/Checked:		Y / N
RAD Screen <0.5 mR/hr:		Y / N

	Date:	Time:		
Relinquished by : (Signature)	1/26/24	1730	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR
Relinquished by : (Signature)	1/26/24	1800	Received by: (Signature)	Temp: 4.8 °C Bottles Received: 4.1
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1-27-24 Time: 9:20

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

ANALYTICAL REPORT

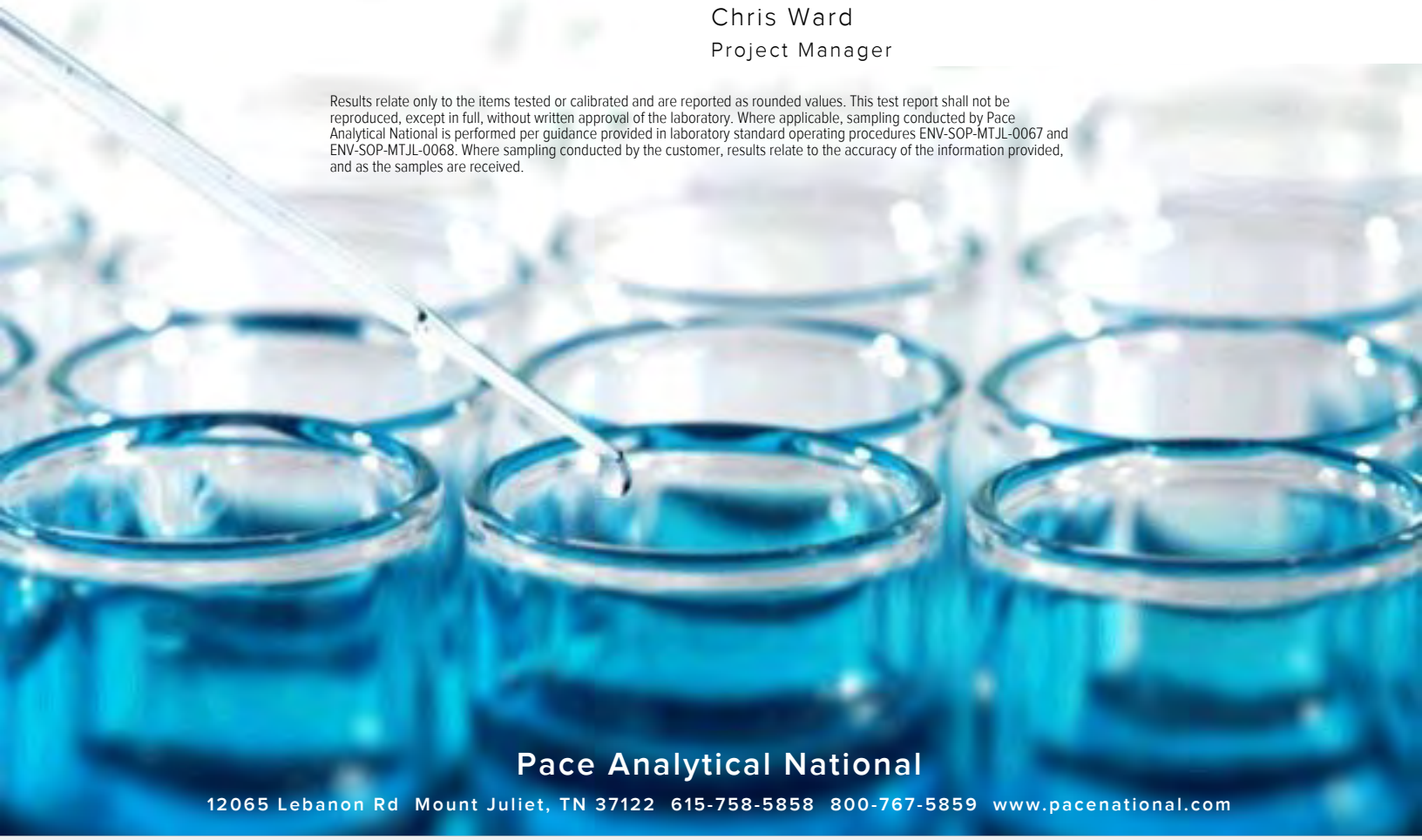
February 05, 2024

Caerus Oil and Gas

Sample Delivery Group:	L1699700
Samples Received:	01/27/2024
Project Number:	
Description:	NPR Backgrounds (C04 696)
Report To:	Jake J. / Brett M. / Blair R. / Andy V. 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

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

20240126-NPRBG-(C04 696-S)@1 L1699700-01 Solid

Collected by: B. Abeyta | Collected date/time: 01/26/24 13:00 | Received date/time: 01/27/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2216911	1	02/01/24 17:14	02/01/24 17:14	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2215117	1	01/31/24 03:34	01/31/24 15:09	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2216217	1	01/30/24 14:19	01/31/24 16:30	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2215287	1	01/29/24 09:17	02/04/24 18:00	EPW	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2216913	1	02/01/24 12:54	02/01/24 22:10	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2214814	5	01/29/24 08:49	01/29/24 16:43	LD	Mt. Juliet, TN

20240126-NPRBG-(C04 696-W)@1 L1699700-02 Solid

Collected by: B. Abeyta | Collected date/time: 01/26/24 14:00 | Received date/time: 01/27/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2216911	1	02/01/24 17:16	02/01/24 17:16	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2215117	1	01/31/24 03:34	01/31/24 15:16	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2216217	1	01/30/24 14:19	01/31/24 16:30	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2215287	1	01/29/24 09:17	02/04/24 18:00	EPW	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2216913	1	02/01/24 12:54	02/01/24 22:13	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2214814	5	01/29/24 08:49	01/29/24 16:46	LD	Mt. Juliet, TN

20240126-NPRBG-(C04 696-NW)@1 L1699700-03 Solid

Collected by: B. Abeyta | Collected date/time: 01/26/24 14:10 | Received date/time: 01/27/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2216911	1	02/01/24 17:18	02/01/24 17:18	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2215117	1	01/31/24 03:34	01/31/24 15:22	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2216217	1	01/30/24 14:19	01/31/24 16:30	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2215287	1	01/29/24 09:17	02/04/24 18:00	EPW	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2216913	1	02/01/24 12:54	02/01/24 22:16	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2214814	5	01/29/24 08:49	01/29/24 16:49	LD	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	0.0984		1	02/01/2024 17:14	WG2216911

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	01/31/2024 15:09	WG2215117

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	7.59	T8	1	01/31/2024 16:30	WG2216217

Sample Narrative:

L1699700-01 WG2216217: 7.59 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	257		10.0	1	02/04/2024 18:00	WG2215287

Sample Narrative:

L1699700-01 WG2215287: at 25C

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	0.619		0.200	1	02/01/2024 22:10	WG2216913

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	4.51		1.00	5	01/29/2024 16:43	WG2214814
Barium	159		2.50	5	01/29/2024 16:43	WG2214814
Cadmium	ND		1.00	5	01/29/2024 16:43	WG2214814
Copper	10.3		5.00	5	01/29/2024 16:43	WG2214814
Lead	9.19		2.00	5	01/29/2024 16:43	WG2214814
Nickel	8.29		2.50	5	01/29/2024 16:43	WG2214814
Selenium	ND		2.50	5	01/29/2024 16:43	WG2214814
Silver	ND		0.500	5	01/29/2024 16:43	WG2214814
Zinc	38.3		25.0	5	01/29/2024 16:43	WG2214814

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.298		1	02/01/2024 17:16	WG2216911

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	01/31/2024 15:16	WG2215117

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	7.70	T8	1	01/31/2024 16:30	WG2216217

Sample Narrative:

L1699700-02 WG2216217: 7.7 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	334		10.0	1	02/04/2024 18:00	WG2215287

Sample Narrative:

L1699700-02 WG2215287: at 25C

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	0.565		0.200	1	02/01/2024 22:13	WG2216913

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.19		1.00	5	01/29/2024 16:46	WG2214814
Barium	236		2.50	5	01/29/2024 16:46	WG2214814
Cadmium	ND		1.00	5	01/29/2024 16:46	WG2214814
Copper	13.6		5.00	5	01/29/2024 16:46	WG2214814
Lead	10.3		2.00	5	01/29/2024 16:46	WG2214814
Nickel	10.4		2.50	5	01/29/2024 16:46	WG2214814
Selenium	ND		2.50	5	01/29/2024 16:46	WG2214814
Silver	ND		0.500	5	01/29/2024 16:46	WG2214814
Zinc	42.1		25.0	5	01/29/2024 16:46	WG2214814

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.595		1	02/01/2024 17:18	WG2216911

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	01/31/2024 15:22	WG2215117

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	7.72	T8	1	01/31/2024 16:30	WG2216217

Sample Narrative:

L1699700-03 WG2216217: 7.72 at 19.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	489		10.0	1	02/04/2024 18:00	WG2215287

Sample Narrative:

L1699700-03 WG2215287: at 25C

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	0.495		0.200	1	02/01/2024 22:16	WG2216913

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	17.7		1.00	5	01/29/2024 16:49	WG2214814
Barium	632		2.50	5	01/29/2024 16:49	WG2214814
Cadmium	ND		1.00	5	01/29/2024 16:49	WG2214814
Copper	18.6		5.00	5	01/29/2024 16:49	WG2214814
Lead	12.0		2.00	5	01/29/2024 16:49	WG2214814
Nickel	12.9		2.50	5	01/29/2024 16:49	WG2214814
Selenium	ND		2.50	5	01/29/2024 16:49	WG2214814
Silver	ND		0.500	5	01/29/2024 16:49	WG2214814
Zinc	50.0		25.0	5	01/29/2024 16:49	WG2214814

Method Blank (MB)

(MB) R4028405-1 01/31/24 12:39

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

L1699588-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1699588-01 01/31/24 14:26 • (DUP) R4028405-11 01/31/24 14:32

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

L1699701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1699701-01 01/31/24 15:28 • (DUP) R4028405-12 01/31/24 15:34

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) R4028405-2 01/31/24 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	11.0	110	80.0-120	

L1699583-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699583-01 01/31/24 12:53 • (MS) R4028405-3 01/31/24 12:59 • (MSD) R4028405-4 01/31/24 13:06

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	19.1	23.1	95.4	115	1	75.0-125			19.0	20

L1699583-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699583-04 01/31/24 13:37 • (MS) R4028405-7 01/31/24 13:55 • (MSD) R4028405-8 01/31/24 14:01

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	22.9	21.9	115	110	1	75.0-125			4.51	20

L1699583-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1699583-01 01/31/24 12:53 • (MS) R4028405-5 01/31/24 13:12

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	638	ND	782	123	50	75.0-125	

L1699583-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1699583-04 01/31/24 13:37 • (MS) R4028405-9 01/31/24 14:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	643	ND	687	107	50	75.0-125	

L1699585-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1699585-02 01/31/24 16:30 • (DUP) R4028423-2 01/31/24 16:30

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	8.10	8.08	1	0.247		1

Sample Narrative:

OS: 8.1 at 19.7C

DUP: 8.08 at 19.7C

L1699701-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1699701-03 01/31/24 16:30 • (DUP) R4028423-3 01/31/24 16:30

Analyte	Original Result pH	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.77	7.78	1	0.129		1

Sample Narrative:

OS: 7.77 at 19.7C

DUP: 7.78 at 19.7C

Laboratory Control Sample (LCS)

(LCS) R4028423-1 01/31/24 16:30

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

Sample Narrative:

LCS: 10 at 19.4C

Method Blank (MB)

(MB) R4029645-1 02/04/24 18:00

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

L1699700-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1699700-01 02/04/24 18:00 • (DUP) R4029645-3 02/04/24 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	257	257	1	0.0390		20

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

L1699711-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1699711-03 02/04/24 18:00 • (DUP) R4029645-4 02/04/24 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	448	447	1	0.223		20

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

Laboratory Control Sample (LCS)

(LCS) R4029645-2 02/04/24 18:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	331	101	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R4029052-1 02/01/24 21:53

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) R4029052-2 02/01/24 21:56 • (LCSD) R4029052-3 02/01/24 21:58

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	1.06	1.08	106	108	80.0-120			2.29	20

Method Blank (MB)

(MB) R4027382-1 01/29/24 15:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R4027382-2 01/29/24 15:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.6	93.6	80.0-120	
Barium	100	89.5	89.5	80.0-120	
Cadmium	100	98.0	98.0	80.0-120	
Copper	100	92.9	92.9	80.0-120	
Lead	100	94.5	94.5	80.0-120	
Nickel	100	97.2	97.2	80.0-120	
Selenium	100	95.3	95.3	80.0-120	
Silver	20.0	18.8	94.1	80.0-120	
Zinc	100	93.4	93.4	80.0-120	

L1699536-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1699536-01 01/29/24 16:03 • (MS) R4027382-5 01/29/24 16:12 • (MSD) R4027382-6 01/29/24 16:16

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	7.65	95.2	91.4	87.5	83.8	5	75.0-125			4.04	20
Barium	100	41.4	124	122	82.2	80.6	5	75.0-125			1.30	20
Cadmium	100	ND	94.2	90.3	94.2	90.3	5	75.0-125			4.17	20
Copper	100	10.3	96.7	91.4	86.4	81.1	5	75.0-125			5.57	20
Lead	100	13.6	99.2	93.5	85.6	80.0	5	75.0-125			5.86	20
Nickel	100	8.45	99.5	95.6	91.0	87.1	5	75.0-125			3.98	20
Selenium	100	ND	92.8	85.1	92.3	84.6	5	75.0-125			8.67	20
Silver	20.0	ND	18.2	17.6	91.0	88.2	5	75.0-125			3.13	20
Zinc	100	28.2	116	109	87.3	81.1	5	75.0-125			5.46	20

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.
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
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	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.

Company Name/Address:
Caerus Oil & Gas

143 Diamond Ave
Parachute,CO 81635

Billing Information:
Same as left.

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

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

SDG # 1699700
C226

Report to:
Blair Rollins

Email To:
brollins@caerusoilandgas.com

Project Description:
NPR Backgrounds (C04 696)

City/State Collected: CO

Please Circle: PT MT CT ET

Phone:
(970) 640-6919

Client Project #

Lab Project #

Collected by (print):
B. Abeyta

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately
Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day X Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Acctnum:
Template:
Prelogin:
PM:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TABLE 915 pH, SPCON, SAR	TABLE 915 Metals	Remarks	Sample # (lab only)
20240126-NPRBG-(C04 696-S)@1	Grab	SS	1	01/26/24	1300	2 1	X	X		-01
20240126-NPRBG-(C04 696-W)@1	Grab	SS	1	01/26/24	1400	2 1	X	X		-02
20240126-NPRBG-(C04 696-NW)@1	Grab	SS	1	01/26/24	1410	2 1	X	X		-03

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 5882 7564 8030

Sample Receipt Checklist

COC Seal Present/Intact:	__NP Y N
COC Signed/Accurate:	Y N
Bottles arrive intact:	Y N
Correct bottles used:	Y N
Sufficient volume sent:	Y N
If Applicable	
VOA Zero Headspace:	Y N
Preservation Correct/Checked:	Y N
RAD Screen <0.5 mR/hr:	Y N

Relinquished by : (Signature)	Date: 1/26/24	Time: 1730	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date: 1/26/24	Time: 1800	Received by: (Signature)	Temp: °C Bottles Received: TLAB .170	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1-27-24 Time: 9:00	Hold: Condition: NCF / OK

ANALYTICAL REPORT

February 28, 2024

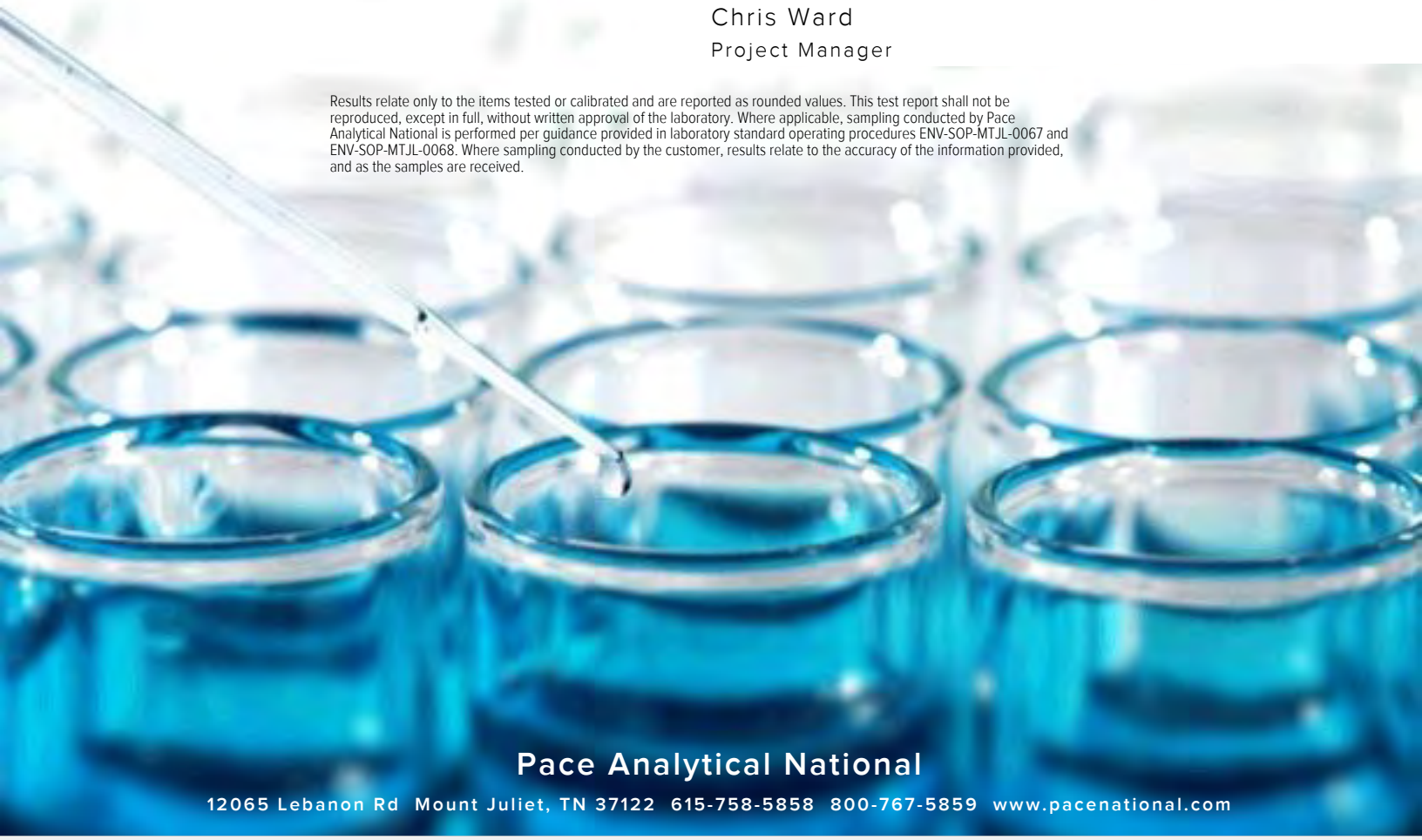
1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Caerus Oil and Gas

Sample Delivery Group:	L1707915
Samples Received:	02/21/2024
Project Number:	
Description:	NPR C04 696 Flowline Release
Report To:	Jake J. / Brett M. / Blair R. / Andy V. 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

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

20240219-C04 696-(POR)@10 L1707915-01 Solid

Collected by: B. Abeyta | Collected date/time: 02/19/24 11:20 | Received date/time: 02/21/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2233441	1	02/27/24 09:56	02/27/24 09:56	JTM	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2231642	1	02/22/24 11:02	02/26/24 07:03	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2231495	1	02/22/24 09:30	02/22/24 10:50	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2231552	1	02/22/24 09:40	02/23/24 11:00	KRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2233445	1	02/25/24 11:15	02/25/24 17:36	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2231573	5	02/22/24 10:35	02/22/24 18:06	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2234053	1	02/23/24 08:26	02/26/24 13:43	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2233387	1	02/23/24 08:26	02/24/24 16:25	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2231876	1	02/22/24 14:57	02/23/24 01:13	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2231346	1	02/22/24 07:28	02/22/24 16:23	LS	Mt. Juliet, TN

20240219-C04 696-(NW)@4 L1707915-02 Solid

Collected by: B. Abeyta | Collected date/time: 02/19/24 11:45 | Received date/time: 02/21/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2233441	1	02/27/24 09:58	02/27/24 09:58	JTM	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2231642	1	02/22/24 11:02	02/26/24 07:09	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2231495	1	02/22/24 09:30	02/22/24 10:50	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2231552	1	02/22/24 09:40	02/23/24 11:00	KRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2233445	1	02/25/24 11:15	02/25/24 17:39	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2231573	5	02/22/24 10:35	02/22/24 18:09	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2234053	1	02/23/24 08:26	02/26/24 14:03	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2233387	1	02/23/24 08:26	02/24/24 16:48	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2231876	1	02/22/24 14:57	02/23/24 01:26	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2231346	1	02/22/24 07:28	02/22/24 16:40	LS	Mt. Juliet, TN

20240219-C04 696-(EW)@4 L1707915-03 Solid

Collected by: B. Abeyta | Collected date/time: 02/19/24 12:05 | Received date/time: 02/21/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2233441	1	02/27/24 09:54	02/27/24 09:54	JTM	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2231642	1	02/22/24 11:02	02/26/24 07:52	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2231495	1	02/22/24 09:30	02/22/24 10:50	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2231552	1	02/22/24 09:40	02/23/24 11:00	KRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2233445	1	02/25/24 11:15	02/25/24 17:42	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2231573	5	02/22/24 10:35	02/22/24 18:12	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2234053	1	02/23/24 08:26	02/26/24 14:22	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2233120	1	02/23/24 08:26	02/24/24 23:33	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2231876	1	02/22/24 14:57	02/23/24 01:39	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2231346	1	02/22/24 07:28	02/22/24 16:58	LS	Mt. Juliet, TN

20240219-C04 696-(SW)@5 L1707915-04 Solid

Collected by: B. Abeyta | Collected date/time: 02/19/24 12:00 | Received date/time: 02/21/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2233441	1	02/27/24 09:59	02/27/24 09:59	JTM	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2231642	1	02/22/24 11:02	02/26/24 07:58	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2231495	1	02/22/24 09:30	02/22/24 10:50	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2231552	1	02/22/24 09:40	02/23/24 11:00	KRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2233445	1	02/25/24 11:15	02/25/24 17:45	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2231573	5	02/22/24 10:35	02/22/24 18:15	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2234053	1	02/23/24 08:26	02/26/24 14:41	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2233120	1	02/23/24 08:26	02/24/24 23:52	JHH	Mt. Juliet, TN

20240219-C04 696-(SW)@5 L1707915-04 Solid

Collected by: B. Abeyta
Collected date/time: 02/19/24 12:00
Received date/time: 02/21/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2231876	1	02/22/24 14:57	02/23/24 10:26	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2231346	1	02/22/24 07:28	02/22/24 17:15	LS	Mt. Juliet, TN

20240219-C04 696-(WW)@4 L1707915-05 Solid

Collected by: B. Abeyta
Collected date/time: 02/19/24 11:55
Received date/time: 02/21/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2233441	1	02/27/24 09:53	02/27/24 09:53	JTM	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2231642	1	02/22/24 11:02	02/26/24 08:05	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2231495	1	02/22/24 09:30	02/22/24 10:50	KRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2231552	1	02/22/24 09:40	02/23/24 11:00	KRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2233445	1	02/25/24 11:15	02/25/24 17:48	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2231573	5	02/22/24 10:35	02/22/24 18:19	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2234053	1	02/23/24 08:26	02/26/24 15:01	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2233120	1	02/23/24 08:26	02/25/24 00:12	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2231876	1	02/22/24 14:57	02/23/24 01:53	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2231346	1	02/22/24 07:28	02/22/24 17:32	LS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	8.58		1	02/27/2024 09:56	WG2233441

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/26/2024 07:03	WG2231642

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	T8	1	02/22/2024 10:50	WG2231495

Sample Narrative:

L1707915-01 WG2231495: 8.32 at 21.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2920		10.0	1	02/23/2024 11:00	WG2231552

Sample Narrative:

L1707915-01 WG2231552: at 25C

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	1.30		0.200	1	02/25/2024 17:36	WG2233445

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.93		1.00	5	02/22/2024 18:06	WG2231573
Barium	214		2.50	5	02/22/2024 18:06	WG2231573
Cadmium	ND		1.00	5	02/22/2024 18:06	WG2231573
Copper	14.8		5.00	5	02/22/2024 18:06	WG2231573
Lead	9.95		2.00	5	02/22/2024 18:06	WG2231573
Nickel	12.7		2.50	5	02/22/2024 18:06	WG2231573
Selenium	ND		2.50	5	02/22/2024 18:06	WG2231573
Silver	ND		0.500	5	02/22/2024 18:06	WG2231573
Zinc	50.8		25.0	5	02/22/2024 18:06	WG2231573

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	2.46		0.100	1	02/26/2024 13:43	WG2234053
(S) a,a,a-Trifluorotoluene(FID)	*86.9*		*77.0-120*		*02/26/2024 13:43*	WG2234053

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00823		0.00100	1	02/24/2024 16:25	WG2233387
Toluene	0.0998		0.00500	1	02/24/2024 16:25	WG2233387
Ethylbenzene	0.0310		0.00250	1	02/24/2024 16:25	WG2233387
Xylenes, Total	0.393		0.00650	1	02/24/2024 16:25	WG2233387
1,2,4-Trimethylbenzene	0.210		0.00500	1	02/24/2024 16:25	WG2233387
1,3,5-Trimethylbenzene	0.256		0.00500	1	02/24/2024 16:25	WG2233387
(S) Toluene-d8	*92.4*		*75.0-131*		*02/24/2024 16:25*	WG2233387
(S) 4-Bromofluorobenzene	*110*		*67.0-138*		*02/24/2024 16:25*	WG2233387
(S) 1,2-Dichloroethane-d4	*79.2*		*70.0-130*		*02/24/2024 16:25*	WG2233387

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	8.73		4.00	1	02/23/2024 01:13	WG2231876
C28-C36 Motor Oil Range	18.9		4.00	1	02/23/2024 01:13	WG2231876
(S) o-Terphenyl	*37.6*		*18.0-148*		*02/23/2024 01:13*	WG2231876

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	02/22/2024 16:23	WG2231346
Anthracene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Benzo(a)anthracene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Benzo(b)fluoranthene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Benzo(k)fluoranthene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Benzo(a)pyrene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Chrysene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Dibenz(a,h)anthracene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Fluoranthene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Fluorene	ND		0.00600	1	02/22/2024 16:23	WG2231346
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/22/2024 16:23	WG2231346
1-Methylnaphthalene	ND		0.0200	1	02/22/2024 16:23	WG2231346
2-Methylnaphthalene	ND		0.0200	1	02/22/2024 16:23	WG2231346
Naphthalene	ND		0.0200	1	02/22/2024 16:23	WG2231346
Pyrene	ND		0.00600	1	02/22/2024 16:23	WG2231346
(S) p-Terphenyl-d14	*65.1*		*23.0-120*		*02/22/2024 16:23*	WG2231346
(S) Nitrobenzene-d5	*71.4*		*14.0-149*		*02/22/2024 16:23*	WG2231346
(S) 2-Fluorobiphenyl	*55.1*		*34.0-125*		*02/22/2024 16:23*	WG2231346

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.641		1	02/27/2024 09:58	WG2233441

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND	J3 J6	1.00	1	02/26/2024 07:09	WG2231642

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.62	T8	1	02/22/2024 10:50	WG2231495

Sample Narrative:

L1707915-02 WG2231495: 8.62 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	284		10.0	1	02/23/2024 11:00	WG2231552

Sample Narrative:

L1707915-02 WG2231552: at 25C

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	0.630		0.200	1	02/25/2024 17:39	WG2233445

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	20.5		1.00	5	02/22/2024 18:09	WG2231573
Barium	553		2.50	5	02/22/2024 18:09	WG2231573
Cadmium	ND		1.00	5	02/22/2024 18:09	WG2231573
Copper	22.3		5.00	5	02/22/2024 18:09	WG2231573
Lead	14.7		2.00	5	02/22/2024 18:09	WG2231573
Nickel	15.9		2.50	5	02/22/2024 18:09	WG2231573
Selenium	ND		2.50	5	02/22/2024 18:09	WG2231573
Silver	ND		0.500	5	02/22/2024 18:09	WG2231573
Zinc	53.4		25.0	5	02/22/2024 18:09	WG2231573

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	0.280	B	0.100	1	02/26/2024 14:03	WG2234053
(S) a,a,a-Trifluorotoluene(FID)	*88.7*		*77.0-120*		*02/26/2024 14:03*	WG2234053

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	02/24/2024 16:48	WG2233387
Toluene	ND		0.00500	1	02/24/2024 16:48	WG2233387
Ethylbenzene	ND		0.00250	1	02/24/2024 16:48	WG2233387
Xylenes, Total	ND		0.00650	1	02/24/2024 16:48	WG2233387
1,2,4-Trimethylbenzene	ND		0.00500	1	02/24/2024 16:48	WG2233387
1,3,5-Trimethylbenzene	ND		0.00500	1	02/24/2024 16:48	WG2233387
(S) Toluene-d8	*97.2*		*75.0-131*		*02/24/2024 16:48*	WG2233387
(S) 4-Bromofluorobenzene	*98.2*		*67.0-138*		*02/24/2024 16:48*	WG2233387
(S) 1,2-Dichloroethane-d4	*79.1*		*70.0-130*		*02/24/2024 16:48*	WG2233387

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	29.0		4.00	1	02/23/2024 01:26	WG2231876
C28-C36 Motor Oil Range	103		4.00	1	02/23/2024 01:26	WG2231876
(S) o-Terphenyl	*36.5*		*18.0-148*		*02/23/2024 01:26*	WG2231876

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	02/22/2024 16:40	WG2231346
Anthracene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Benzo(a)anthracene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Benzo(b)fluoranthene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Benzo(k)fluoranthene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Benzo(a)pyrene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Chrysene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Dibenz(a,h)anthracene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Fluoranthene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Fluorene	ND		0.00600	1	02/22/2024 16:40	WG2231346
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/22/2024 16:40	WG2231346
1-Methylnaphthalene	ND		0.0200	1	02/22/2024 16:40	WG2231346
2-Methylnaphthalene	ND		0.0200	1	02/22/2024 16:40	WG2231346
Naphthalene	ND		0.0200	1	02/22/2024 16:40	WG2231346
Pyrene	ND		0.00600	1	02/22/2024 16:40	WG2231346
(S) p-Terphenyl-d14	*72.9*		*23.0-120*		*02/22/2024 16:40*	WG2231346
(S) Nitrobenzene-d5	*67.7*		*14.0-149*		*02/22/2024 16:40*	WG2231346
(S) 2-Fluorobiphenyl	*66.9*		*34.0-125*		*02/22/2024 16:40*	WG2231346

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.593		1	02/27/2024 09:54	WG2233441

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	02/26/2024 07:52	WG2231642

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	8.60	T8	1	02/22/2024 10:50	WG2231495

Sample Narrative:

L1707915-03 WG2231495: 8.6 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	282		10.0	1	02/23/2024 11:00	WG2231552

Sample Narrative:

L1707915-03 WG2231552: at 25C

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	0.310		0.200	1	02/25/2024 17:42	WG2233445

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	12.3		1.00	5	02/22/2024 18:12	WG2231573
Barium	1500		2.50	5	02/22/2024 18:12	WG2231573
Cadmium	ND		1.00	5	02/22/2024 18:12	WG2231573
Copper	16.6		5.00	5	02/22/2024 18:12	WG2231573
Lead	11.1		2.00	5	02/22/2024 18:12	WG2231573
Nickel	12.3		2.50	5	02/22/2024 18:12	WG2231573
Selenium	ND		2.50	5	02/22/2024 18:12	WG2231573
Silver	ND		0.500	5	02/22/2024 18:12	WG2231573
Zinc	46.1		25.0	5	02/22/2024 18:12	WG2231573

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	0.381		0.100	1	02/26/2024 14:22	WG2234053
(S) a,a,a-Trifluorotoluene(FID)	*87.8*		*77.0-120*		*02/26/2024 14:22*	WG2234053

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00492		0.00100	1	02/24/2024 23:33	WG2233120
Toluene	0.0211		0.00500	1	02/24/2024 23:33	WG2233120
Ethylbenzene	ND		0.00250	1	02/24/2024 23:33	WG2233120
Xylenes, Total	0.0187		0.00650	1	02/24/2024 23:33	WG2233120
1,2,4-Trimethylbenzene	ND		0.00500	1	02/24/2024 23:33	WG2233120
1,3,5-Trimethylbenzene	0.00742		0.00500	1	02/24/2024 23:33	WG2233120
(S) Toluene-d8	*99.9*		*75.0-131*		*02/24/2024 23:33*	WG2233120
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*02/24/2024 23:33*	WG2233120
(S) 1,2-Dichloroethane-d4	*99.9*		*70.0-130*		*02/24/2024 23:33*	WG2233120

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	37.9		4.00	1	02/23/2024 01:39	WG2231876
C28-C36 Motor Oil Range	92.6		4.00	1	02/23/2024 01:39	WG2231876
(S) o-Terphenyl	*43.0*		*18.0-148*		*02/23/2024 01:39*	WG2231876

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	02/22/2024 16:58	WG2231346
Anthracene	ND		0.00600	1	02/22/2024 16:58	WG2231346
Benzo(a)anthracene	ND		0.00600	1	02/22/2024 16:58	WG2231346
Benzo(b)fluoranthene	0.0176		0.00600	1	02/22/2024 16:58	WG2231346
Benzo(k)fluoranthene	ND		0.00600	1	02/22/2024 16:58	WG2231346
Benzo(a)pyrene	ND		0.00600	1	02/22/2024 16:58	WG2231346
Chrysene	0.00747		0.00600	1	02/22/2024 16:58	WG2231346
Dibenz(a,h)anthracene	ND		0.00600	1	02/22/2024 16:58	WG2231346
Fluoranthene	0.00613		0.00600	1	02/22/2024 16:58	WG2231346
Fluorene	ND		0.00600	1	02/22/2024 16:58	WG2231346
Indeno(1,2,3-cd)pyrene	0.00637		0.00600	1	02/22/2024 16:58	WG2231346
1-Methylnaphthalene	ND		0.0200	1	02/22/2024 16:58	WG2231346
2-Methylnaphthalene	0.0296		0.0200	1	02/22/2024 16:58	WG2231346
Naphthalene	ND		0.0200	1	02/22/2024 16:58	WG2231346
Pyrene	ND		0.00600	1	02/22/2024 16:58	WG2231346
(S) p-Terphenyl-d14	*78.6*		*23.0-120*		*02/22/2024 16:58*	WG2231346
(S) Nitrobenzene-d5	*75.8*		*14.0-149*		*02/22/2024 16:58*	WG2231346
(S) 2-Fluorobiphenyl	*74.2*		*34.0-125*		*02/22/2024 16:58*	WG2231346

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.540		1	02/27/2024 09:59	WG2233441

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	02/26/2024 07:58	WG2231642

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	8.63	T8	1	02/22/2024 10:50	WG2231495

Sample Narrative:

L1707915-04 WG2231495: 8.63 at 20.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	246		10.0	1	02/23/2024 11:00	WG2231552

Sample Narrative:

L1707915-04 WG2231552: at 25C

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	0.745		0.200	1	02/25/2024 17:45	WG2233445

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	12.1		1.00	5	02/22/2024 18:15	WG2231573
Barium	1990		2.50	5	02/22/2024 18:15	WG2231573
Cadmium	ND		1.00	5	02/22/2024 18:15	WG2231573
Copper	18.4		5.00	5	02/22/2024 18:15	WG2231573
Lead	10.6		2.00	5	02/22/2024 18:15	WG2231573
Nickel	12.6		2.50	5	02/22/2024 18:15	WG2231573
Selenium	ND		2.50	5	02/22/2024 18:15	WG2231573
Silver	ND		0.500	5	02/22/2024 18:15	WG2231573
Zinc	43.5		25.0	5	02/22/2024 18:15	WG2231573

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	0.563		0.100	1	02/26/2024 14:41	WG2234053
(S) a,a,a-Trifluorotoluene(FID)	*84.8*		*77.0-120*		*02/26/2024 14:41*	WG2234053

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00448		0.00100	1	02/24/2024 23:52	WG2233120
Toluene	0.0354		0.00500	1	02/24/2024 23:52	WG2233120
Ethylbenzene	0.00650		0.00250	1	02/24/2024 23:52	WG2233120
Xylenes, Total	0.260		0.00650	1	02/24/2024 23:52	WG2233120
1,2,4-Trimethylbenzene	0.0394		0.00500	1	02/24/2024 23:52	WG2233120
1,3,5-Trimethylbenzene	0.107		0.00500	1	02/24/2024 23:52	WG2233120
(S) Toluene-d8	*98.8*		*75.0-131*		*02/24/2024 23:52*	WG2233120
(S) 4-Bromofluorobenzene	*109*		*67.0-138*		*02/24/2024 23:52*	WG2233120
(S) 1,2-Dichloroethane-d4	*101*		*70.0-130*		*02/24/2024 23:52*	WG2233120

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	9.48		4.00	1	02/23/2024 10:26	WG2231876
C28-C36 Motor Oil Range	12.5		4.00	1	02/23/2024 10:26	WG2231876
(S) o-Terphenyl	*55.1*		*18.0-148*		*02/23/2024 10:26*	WG2231876

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	02/22/2024 17:15	WG2231346
Anthracene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Benzo(a)anthracene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Benzo(b)fluoranthene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Benzo(k)fluoranthene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Benzo(a)pyrene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Chrysene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Dibenz(a,h)anthracene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Fluoranthene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Fluorene	ND		0.00600	1	02/22/2024 17:15	WG2231346
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/22/2024 17:15	WG2231346
1-Methylnaphthalene	ND		0.0200	1	02/22/2024 17:15	WG2231346
2-Methylnaphthalene	ND		0.0200	1	02/22/2024 17:15	WG2231346
Naphthalene	ND		0.0200	1	02/22/2024 17:15	WG2231346
Pyrene	ND		0.00600	1	02/22/2024 17:15	WG2231346
(S) p-Terphenyl-d14	*74.4*		*23.0-120*		*02/22/2024 17:15*	WG2231346
(S) Nitrobenzene-d5	*87.5*		*14.0-149*		*02/22/2024 17:15*	WG2231346
(S) 2-Fluorobiphenyl	*82.5*		*34.0-125*		*02/22/2024 17:15*	WG2231346

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.625		1	02/27/2024 09:53	WG2233441

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	02/26/2024 08:05	WG2231642

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	8.61	T8	1	02/22/2024 10:50	WG2231495

Sample Narrative:

L1707915-05 WG2231495: 8.61 at 20.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	348		10.0	1	02/23/2024 11:00	WG2231552

Sample Narrative:

L1707915-05 WG2231552: at 25C

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	0.741		0.200	1	02/25/2024 17:48	WG2233445

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	11.7		1.00	5	02/22/2024 18:19	WG2231573
Barium	2110		2.50	5	02/22/2024 18:19	WG2231573
Cadmium	ND		1.00	5	02/22/2024 18:19	WG2231573
Copper	18.8		5.00	5	02/22/2024 18:19	WG2231573
Lead	12.5		2.00	5	02/22/2024 18:19	WG2231573
Nickel	13.0		2.50	5	02/22/2024 18:19	WG2231573
Selenium	ND		2.50	5	02/22/2024 18:19	WG2231573
Silver	ND		0.500	5	02/22/2024 18:19	WG2231573
Zinc	47.1		25.0	5	02/22/2024 18:19	WG2231573

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	0.599		0.100	1	02/26/2024 15:01	WG2234053
(S) a,a,a-Trifluorotoluene(FID)	*88.2*		*77.0-120*		*02/26/2024 15:01*	WG2234053

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00623		0.00100	1	02/25/2024 00:12	WG2233120
Toluene	0.0427		0.00500	1	02/25/2024 00:12	WG2233120
Ethylbenzene	0.00613		0.00250	1	02/25/2024 00:12	WG2233120
Xylenes, Total	0.166		0.00650	1	02/25/2024 00:12	WG2233120
1,2,4-Trimethylbenzene	0.0563		0.00500	1	02/25/2024 00:12	WG2233120
1,3,5-Trimethylbenzene	0.175		0.00500	1	02/25/2024 00:12	WG2233120
(S) Toluene-d8	*101*		*75.0-131*		*02/25/2024 00:12*	WG2233120
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*02/25/2024 00:12*	WG2233120
(S) 1,2-Dichloroethane-d4	*98.3*		*70.0-130*		*02/25/2024 00:12*	WG2233120

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	51.7		4.00	1	02/23/2024 01:53	WG2231876
C28-C36 Motor Oil Range	114		4.00	1	02/23/2024 01:53	WG2231876
(S) o-Terphenyl	*39.0*		*18.0-148*		*02/23/2024 01:53*	WG2231876

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	02/22/2024 17:32	WG2231346
Anthracene	ND		0.00600	1	02/22/2024 17:32	WG2231346
Benzo(a)anthracene	0.00848		0.00600	1	02/22/2024 17:32	WG2231346
Benzo(b)fluoranthene	0.0346		0.00600	1	02/22/2024 17:32	WG2231346
Benzo(k)fluoranthene	0.00790		0.00600	1	02/22/2024 17:32	WG2231346
Benzo(a)pyrene	0.00928		0.00600	1	02/22/2024 17:32	WG2231346
Chrysene	0.0121		0.00600	1	02/22/2024 17:32	WG2231346
Dibenz(a,h)anthracene	ND		0.00600	1	02/22/2024 17:32	WG2231346
Fluoranthene	0.0103		0.00600	1	02/22/2024 17:32	WG2231346
Fluorene	ND		0.00600	1	02/22/2024 17:32	WG2231346
Indeno(1,2,3-cd)pyrene	0.0144		0.00600	1	02/22/2024 17:32	WG2231346
1-Methylnaphthalene	0.0237		0.0200	1	02/22/2024 17:32	WG2231346
2-Methylnaphthalene	0.0515		0.0200	1	02/22/2024 17:32	WG2231346
Naphthalene	0.0350		0.0200	1	02/22/2024 17:32	WG2231346
Pyrene	ND		0.00600	1	02/22/2024 17:32	WG2231346
(S) p-Terphenyl-d14	*68.0*		*23.0-120*		*02/22/2024 17:32*	WG2231346
(S) Nitrobenzene-d5	*75.3*		*14.0-149*		*02/22/2024 17:32*	WG2231346
(S) 2-Fluorobiphenyl	*67.7*		*34.0-125*		*02/22/2024 17:32*	WG2231346

Method Blank (MB)

(MB) R4038197-1 02/26/24 06:23

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

L1707915-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1707915-05 02/26/24 08:05 • (DUP) R4038197-7 02/26/24 08:11

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

L1708578-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1708578-01 02/26/24 08:35 • (DUP) R4038197-8 02/26/24 08:54

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) R4038197-2 02/26/24 06:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	11.2	112	80.0-120	

L1707915-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1707915-02 02/26/24 07:09 • (MS) R4038197-4 02/26/24 07:21 • (MSD) R4038197-5 02/26/24 07:40

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	4.34	7.70	21.7	38.5	1	75.0-125	J6	J3 J6	55.8	20

L1707915-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1707915-02 02/26/24 07:09 • (MS) R4038197-6 02/26/24 07:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	631	ND	592	93.8	50	75.0-125	

L1707915-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1707915-03 02/22/24 10:50 • (DUP) R4036923-2 02/22/24 10:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.60	8.59	1	0.116		1

Sample Narrative:

OS: 8.6 at 21.2C

DUP: 8.59 at 20.9C

Laboratory Control Sample (LCS)

(LCS) R4036923-1 02/22/24 10:50

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

Sample Narrative:

LCS: 10 at 20.4C

Method Blank (MB)

(MB) R4037493-1 02/23/24 11:00

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

L1706679-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1706679-01 02/23/24 11:00 • (DUP) R4037493-3 02/23/24 11:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2570	2590	1	0.813		20

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

L1707132-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1707132-07 02/23/24 11:00 • (DUP) R4037493-4 02/23/24 11:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	31.0	30.2	1	2.61		20

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

Laboratory Control Sample (LCS)

(LCS) R4037493-2 02/23/24 11:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	329	101	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R4038040-1 02/25/24 17:28

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) R4038040-2 02/25/24 17:30 • (LCSD) R4038040-3 02/25/24 17:33

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	1.01	1.03	101	103	80.0-120			1.29	20

QUALITY CONTROL SUMMARY

L1707915-01,02,03,04,05

Method Blank (MB)

(MB) R4037297-1 02/22/24 17:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R4037297-8 02/22/24 18:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.6	95.6	80.0-120	
Barium	100	93.5	93.5	80.0-120	
Cadmium	100	99.9	99.9	80.0-120	
Copper	100	99.4	99.4	80.0-120	
Lead	100	94.6	94.6	80.0-120	
Nickel	100	98.9	98.9	80.0-120	
Selenium	100	96.9	96.9	80.0-120	
Silver	20.0	19.8	98.9	80.0-120	
Zinc	100	94.1	94.1	80.0-120	

L1707539-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1707539-01 02/22/24 17:29 • (MS) R4037297-6 02/22/24 17:39 • (MSD) R4037297-7 02/22/24 17:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	99.6	3.20	89.3	86.7	86.1	83.5	5	75.0-125			2.89	20
Barium	99.6	77.3	160	163	82.6	85.7	5	75.0-125			1.87	20
Cadmium	99.6	ND	94.5	91.6	94.5	91.6	5	75.0-125			3.17	20
Copper	99.6	12.5	102	97.6	89.2	85.1	5	75.0-125			4.16	20
Lead	99.6	7.18	95.0	96.9	87.8	89.8	5	75.0-125			2.00	20
Nickel	99.6	10.1	101	96.4	90.8	86.3	5	75.0-125			4.48	20
Selenium	99.6	ND	87.5	86.6	87.3	86.3	5	75.0-125			1.07	20
Silver	20.0	ND	18.6	18.1	93.2	90.5	5	75.0-125			2.91	20
Zinc	99.6	34.5	114	116	79.1	81.3	5	75.0-125			1.91	20

Method Blank (MB)

(MB) R4039156-3 02/26/24 10:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0297	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*95.9*			*77.0-120*

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

(LCS) R4039156-1 02/26/24 09:41 • (LCSD) R4039156-2 02/26/24 10:01

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 %
TPH (GC/FID) Low Fraction	5.00	5.32	5.39	106	108	72.0-127			1.31	20
(S) a,a,a-Trifluorotoluene(FID)				*105*	*104*	*77.0-120*				

Method Blank (MB)

(MB) R4038568-3 02/24/24 17:33

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	*99.4*			*75.0-131*
(S) 4-Bromofluorobenzene	*104*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*90.3*			*70.0-130*

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

(LCS) R4038568-1 02/24/24 15:56 • (LCSD) R4038568-2 02/24/24 16:15

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	0.134	0.132	107	106	70.0-123			1.50	20
Toluene	0.125	0.134	0.132	107	106	75.0-121			1.50	20
Ethylbenzene	0.125	0.132	0.132	106	106	74.0-126			0.000	20
Xylenes, Total	0.375	0.400	0.396	107	106	72.0-127			1.01	20
1,2,4-Trimethylbenzene	0.125	0.124	0.120	99.2	96.0	70.0-126			3.28	20
1,3,5-Trimethylbenzene	0.125	0.124	0.120	99.2	96.0	73.0-127			3.28	20
(S) Toluene-d8				*99.1*	*99.6*	*75.0-131*				
(S) 4-Bromofluorobenzene				*109*	*109*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*95.8*	*99.9*	*70.0-130*				

Method Blank (MB)

(MB) R4038688-3 02/24/24 11:32

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	*98.1*			*75.0-131*
(S) 4-Bromofluorobenzene	*95.4*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*81.0*			*70.0-130*

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

(LCS) R4038688-1 02/24/24 09:45 • (LCSD) R4038688-2 02/24/24 10:06

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	0.127	0.126	102	101	70.0-123			0.791	20
Toluene	0.125	0.120	0.121	96.0	96.8	75.0-121			0.830	20
Ethylbenzene	0.125	0.127	0.139	102	111	74.0-126			9.02	20
Xylenes, Total	0.375	0.381	0.381	102	102	72.0-127			0.000	20
1,2,4-Trimethylbenzene	0.125	0.116	0.119	92.8	95.2	70.0-126			2.55	20
1,3,5-Trimethylbenzene	0.125	0.117	0.121	93.6	96.8	73.0-127			3.36	20
(S) Toluene-d8				*94.9*	*94.5*	*75.0-131*				
(S) 4-Bromofluorobenzene				*98.1*	*99.9*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*88.1*	*88.7*	*70.0-130*				

L1708212-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1708212-07 02/24/24 20:03 • (MS) R4038688-4 02/24/24 21:52 • (MSD) R4038688-5 02/24/24 22:14

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 %
Benzene	0.113	ND	0.0326	0.115	28.8	102	1	10.0-149		J3	112	37
Toluene	0.113	ND	0.0322	0.116	28.5	103	1	10.0-156		J3	113	38
Ethylbenzene	0.113	ND	0.0321	0.121	28.4	107	1	10.0-160		J3	116	38
Xylenes, Total	0.337	ND	0.101	0.349	30.0	104	1	10.0-160		J3	110	38
1,2,4-Trimethylbenzene	0.113	ND	0.0334	0.112	29.6	99.1	1	10.0-160		J3	108	36
1,3,5-Trimethylbenzene	0.113	ND	0.0307	0.110	27.2	97.3	1	10.0-160		J3	113	38
(S) Toluene-d8					*95.5*	*95.8*		*75.0-131*				
(S) 4-Bromofluorobenzene					*95.6*	*94.4*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*81.1*	*83.8*		*70.0-130*				

Method Blank (MB)

(MB) R4037422-1 02/22/24 22:09

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	*56.8*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R4037422-2 02/22/24 22:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.5	65.0	50.0-150	
(S) o-Terphenyl			*59.8*	*18.0-148*	

L1708082-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1708082-05 02/23/24 02:45 • (MS) R4037422-3 02/23/24 02:58 • (MSD) R4037422-4 02/23/24 03:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	47.3	ND	29.8	34.4	59.5	68.2	1	50.0-150			14.3	20
(S) o-Terphenyl					*44.0*	*51.7*		*18.0-148*				

Method Blank (MB)

(MB) R4038675-2 02/22/24 12:54

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	*79.1*			*23.0-120*
(S) Nitrobenzene-d5	*69.7*			*14.0-149*
(S) 2-Fluorobiphenyl	*76.3*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R4038675-1 02/22/24 12:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0627	78.4	50.0-120	
Anthracene	0.0800	0.0672	84.0	50.0-126	
Benzo(a)anthracene	0.0800	0.0651	81.4	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0620	77.5	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0618	77.3	49.0-125	
Benzo(a)pyrene	0.0800	0.0588	73.5	42.0-120	
Chrysene	0.0800	0.0649	81.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0652	81.5	47.0-125	
Fluoranthene	0.0800	0.0696	87.0	49.0-129	
Fluorene	0.0800	0.0685	85.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0618	77.3	46.0-125	
1-Methylnaphthalene	0.0800	0.0677	84.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0655	81.9	50.0-120	
Naphthalene	0.0800	0.0626	78.3	50.0-120	
Pyrene	0.0800	0.0607	75.9	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R4038675-1 02/22/24 12:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*80.3*	*23.0-120*	
(S) Nitrobenzene-d5			*81.9*	*14.0-149*	
(S) 2-Fluorobiphenyl			*83.6*	*34.0-125*	

L1707878-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1707878-04 02/22/24 13:12 • (MS) R4038675-3 02/22/24 13:29 • (MSD) R4038675-4 02/22/24 13:46

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	0.0788	ND	0.0540	0.0522	68.5	66.2	1	14.0-127			3.39	27
Anthracene	0.0788	ND	0.0617	0.0568	74.4	68.1	1	10.0-145			8.27	30
Benzo(a)anthracene	0.0788	0.0206	0.0821	0.0706	78.0	63.5	1	10.0-139			15.1	30
Benzo(b)fluoranthene	0.0788	0.0293	0.0886	0.0773	75.3	60.9	1	10.0-140			13.6	36
Benzo(k)fluoranthene	0.0788	0.0112	0.0658	0.0618	69.3	64.2	1	10.0-137			6.27	31
Benzo(a)pyrene	0.0788	0.0225	0.0835	0.0736	77.4	64.8	1	10.0-141			12.6	31
Chrysene	0.0788	0.0201	0.0871	0.0763	85.0	71.3	1	10.0-145			13.2	30
Dibenz(a,h)anthracene	0.0788	ND	0.0570	0.0571	68.0	68.1	1	10.0-132			0.175	31
Fluoranthene	0.0788	0.0467	0.128	0.0960	103	62.6	1	10.0-153			28.6	33
Fluorene	0.0788	ND	0.0569	0.0561	72.2	71.2	1	11.0-130			1.42	29
Indeno(1,2,3-cd)pyrene	0.0788	0.0155	0.0716	0.0657	71.2	63.7	1	10.0-137			8.59	32
1-Methylnaphthalene	0.0788	ND	0.0561	0.0563	71.2	71.4	1	10.0-142			0.356	28
2-Methylnaphthalene	0.0788	ND	0.0544	0.0553	69.0	70.2	1	10.0-137			1.64	28
Naphthalene	0.0788	ND	0.0545	0.0556	69.2	70.6	1	10.0-135			2.00	27
Pyrene	0.0788	0.0346	0.104	0.0803	88.1	58.0	1	10.0-148			25.7	35
(S) p-Terphenyl-d14					*62.7*	*68.7*		*23.0-120*				
(S) Nitrobenzene-d5					*64.9*	*64.7*		*14.0-149*				
(S) 2-Fluorobiphenyl					*55.7*	*57.2*		*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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
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.

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.

Company Name/Address:
Caerus Oil & Gas

143 Diamond Ave
Parachute,CO 81635

Billing Information:
Same as left.

Pres Chk

Report to:
Blair Rollins

Email To:
brollins@caerusoilandgas.com

Project Description:
NPR C04 696 Flowline Release

City/State Collected:

Please Circle: PT MT CT ET

Phone:
(970) 640-6919

Client Project #

Lab Project #

Collected by (print):
B.Abetya

Site/Facility ID #

P.O. #

Collected by (signature):
BA

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day X Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

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

SDG # 1707915

H017

Acctnum:
Template:
Prelogin:
PM:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TABLE 915 GRO/DRO/ORO	TABLE 915 Metals	TABLE 915 VOCs	TABLE 915 pH, SPCON, SAR	TABLE 915 PAHs	Remarks	Sample # (lab only)
20240219-C04 696-(POR)@10	Grab	SS	10	2024-02-19	1120	4	X	X	X	X	X		-01
20240219-C04 696-(NW)@4	Grab	SS	4	2024-02-19	1145	4	X	X	X	X	X		-02
20240219-C04 696-(EW)@4	Grab	SS	4	2024-02-19	1205	4	X	X	X	X	X		-03
20240219-C04 696-(SW)@5	Grab	SS	5	2024-02-19	1200	4	X	X	X	X	X		-04
20240219-C04 696-(WW)@4	Grab	SS	4	2024-02-19	1155	4	X	X	X	X	X		-05

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
Sample #5 prioritize hydrocarbons, pH, SAR, Arsenic. (Confirm with Andy @ Caerus)

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 6426 8306 8160

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
BA	2-20-24	1445			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.9 °C Bottles Received:	If preservation required by Login: Date/Time
	2/20/24	1700		1.1 to= 1.1 20	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: Condition:
			(14)	2/21/24 900	NCF / OK

ANALYTICAL REPORT

March 21, 2024

Caerus Oil and Gas

Sample Delivery Group:	L1715116
Samples Received:	03/14/2024
Project Number:	
Description:	NPR C04 696 Flowline Release
Site:	CO4 696
Report To:	Jake J. / Brett M. / Blair R. / Andy V. 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

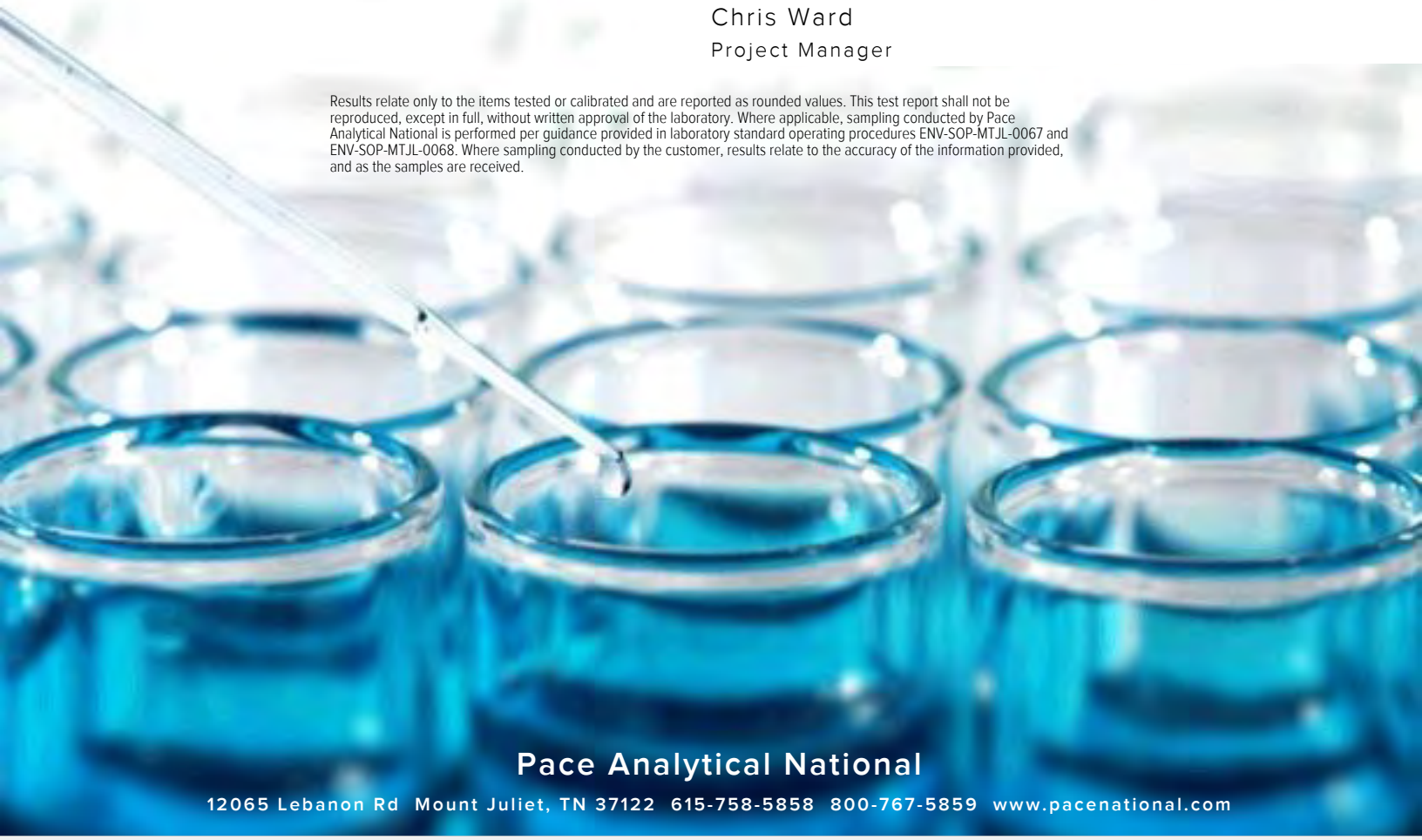


TABLE OF CONTENTS

SAMPLE SUMMARY

20240313-C04 696-(POR)@12 L1715116-01 Solid

Collected by: B. Abeyta
Collected date/time: 03/13/24 09:30
Received date/time: 03/14/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2248611	1	03/19/24 11:48	03/19/24 11:48	DJS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2246973	1	03/14/24 16:13	03/14/24 21:30	KRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2246801	5	03/16/24 07:54	03/20/24 20:17	LD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.63		1	03/19/2024 11:48	WG2248611

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.62	T8	1	03/14/2024 21:30	WG2246973

Sample Narrative:

L1715116-01 WG2246973: 7.62 at 19.9C

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	14.8		1.00	5	03/20/2024 20:17	WG2246801

L1714526-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1714526-11 03/14/24 21:30 • (DUP) R4045875-2 03/14/24 21:30

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.70	7.69	1	0.130		1

Sample Narrative:

OS: 7.7 at 20.6C

DUP: 7.69 at 20.4C

L1714564-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1714564-01 03/14/24 21:30 • (DUP) R4045875-3 03/14/24 21:30

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.67	7.65	1	0.261		1

Sample Narrative:

OS: 7.67 at 20.7C

DUP: 7.65 at 20.3C

Laboratory Control Sample (LCS)

(LCS) R4045875-1 03/14/24 21:30

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

Sample Narrative:

LCS: 10 at 20.1C

Method Blank (MB)

(MB) R4048075-1 03/20/24 19:53

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) R4048075-2 03/20/24 19:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.6	97.6	80.0-120	

L1714921-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1714921-04 03/20/24 20:00 • (MS) R4048075-5 03/20/24 20:10 • (MSD) R4048075-6 03/20/24 20:13

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	3.19	82.9	71.6	79.7	68.4	5	75.0-125		J6	14.6	20

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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.
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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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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
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.

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.

Company Name/Address:
Caerus Oil & Gas

143 Diamond Ave
Parachute,CO 81635

Billing Information:
Same as left.

Pres Chk

Report to:
Blair Rollins

Email To:
brollins@caerusoilandgas.com

Project Description:
NPR C04 696 Flowline Release

City/State Collected: CO

Please Circle: PT (MT) CT ET

Phone:
(970) 640-6919

Client Project #

Lab Project #

Collected by (print):
B.Abetya

Site/Facility ID #
CO4 696

P.O. #

Collected by (signature):
[signature]

Immediately
Packed on Ice N ____ Y X

Rush? (Lab MUST Be Notified)
____ Same Day X Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Table 915 SAR	TABLE 915 pH	Table 915 Arsenic								Remarks	Sample # (lab only)
20240313-C04 696-(POR)@12	Grab	SS	12	2024-03-13	0930	3	X	X	X									-01

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

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

SDG # L1715116
F167

Acctnum:
Template:
Prelogin:
PM:
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
[redacted]

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP X Y __N
COC Signed/Accurate: X Y __N
Bottles arrive intact: X Y __N
Correct bottles used: X Y __N
Sufficient volume sent: X Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: X Y __N
RAD Screen <0.5 mR/hr: X Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
[signature]	3/13/24	1420	[signature]	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: DRAFT C Bottles Received:
[signature]	3/13/24	1580	[signature]	2.8+0 3
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
			[signature]	3/14/24 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

STATEMENT OF OPERATOR KNOWLEDGE

C04-1C-4 Flowline Release
CECMC Release ID: 485888
Produced Fluid Analysis – Operator Knowledge

On the C04 696 well pad, produced fluid is transported through a flowline from the well to the 2-phase separator, where the produced fluid (liquid) is separated from the dry gas. The produced fluid is then moved through the dump line to the production tanks for storage on the pad. Following separation, the gas, which still contains a small percentage of produced fluid, moves through the sales line towards the meter before leaving the location.

Caerus has collected a produced fluid sample from the 1C separator on the C04 696 well pad to determine the typical pH level and arsenic content of fluid produced from the 1C-4 well.

Sample Name	Sample Date	Sample Type	pH	Arsenic
20240313-NPRSOURCE-(C04 696-1C-SEP)	2024-03-13	Separator	6.48	<1.00 mg/L

It is the Operators knowledge that the most likely source for elevated pH and arsenic levels in soil in the vicinity of the flowline release would be produced fluid. Based on laboratory analytical results of the produced fluid sample collected from the 1C separator, Caerus believes that the elevated pH and arsenic levels reported in the release cleanup excavation is representative of naturally occurring soil composition and not the result of oil and natural gas production activities.

ANALYTICAL REPORT

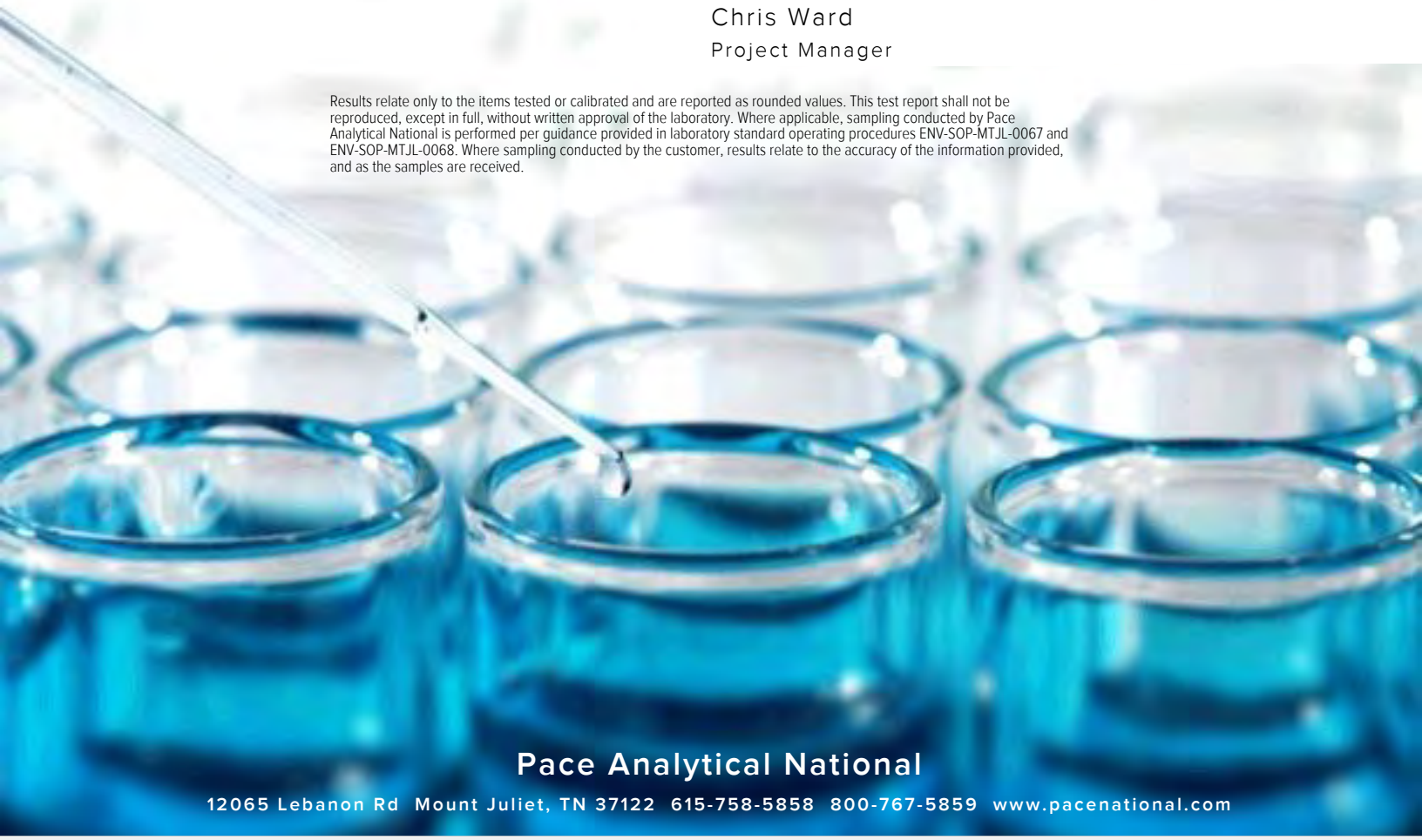
March 21, 2024

Caerus Oil and Gas

Sample Delivery Group:	L1715133
Samples Received:	03/14/2024
Project Number:	
Description:	NPR Source (CO4 696) Produced Water
Site:	NPR SOURCE
Report To:	Jake J. / Brett M. / Blair R. / Andy V. 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

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

20240313-NPR SOURCE-(C04 696-1C-SEP) L1715133-01 WW

Collected by: B. Abeyta
Collected date/time: 03/13/24 09:30
Received date/time: 03/14/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Cr C-2011	WG2245926	1	03/19/24 01:53	03/19/24 01:53	VSS	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG2247780	1	03/16/24 15:10	03/16/24 15:10	KRB	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG2248581	1	03/19/24 08:34	03/19/24 18:44	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 200.8	WG2250007	10	03/20/24 07:42	03/20/24 18:38	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 200.8	WG2250007	5	03/20/24 07:42	03/20/24 18:12	JPD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Sample Delivery Group (SDG) Narrative

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

Lab Sample ID	Project Sample ID	Method
L1715133-01	20240313-NPR SOURCE-(C04696-1C-SEP)	3500Cr C-2011

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND	T8	0.000500	1	03/19/2024 01:53	WG2245926

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.48	T8	1	03/16/2024 15:10	WG2247780

Sample Narrative:

L1715133-01 WG2247780: 6.48 at 19.7C

Metals (ICP) by Method 200.7

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	3.83		0.200	1	03/19/2024 18:44	WG2248581

Metals (ICPMS) by Method 200.8

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic	ND		0.00500	5	03/20/2024 18:12	WG2250007
Barium	42.6		0.0500	10	03/20/2024 18:38	WG2250007
Cadmium	0.0302		0.00500	5	03/20/2024 18:12	WG2250007
Copper	0.0339		0.00500	5	03/20/2024 18:12	WG2250007
Lead	ND		0.0100	5	03/20/2024 18:12	WG2250007
Nickel	0.144		0.0100	5	03/20/2024 18:12	WG2250007
Selenium	ND		0.0100	5	03/20/2024 18:12	WG2250007
Silver	ND		0.00500	5	03/20/2024 18:12	WG2250007
Zinc	0.263		0.100	5	03/20/2024 18:12	WG2250007

QUALITY CONTROL SUMMARY

L1715133-01

Method Blank (MB)

(MB) R4047128-1 03/18/24 23:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hexavalent Chromium	U		0.000150	0.000500

L1714567-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1714567-01 03/19/24 00:03 • (DUP) R4047128-3 03/19/24 00:14

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	ND	ND	1	6.18		20

L1715473-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1715473-01 03/19/24 02:04 • (DUP) R4047128-6 03/19/24 02:15

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

Laboratory Control Sample (LCS)

(LCS) R4047128-2 03/18/24 23:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	0.00200	0.00210	105	90.0-110	

L1714682-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1714682-01 03/19/24 00:47 • (MS) R4047128-4 03/19/24 00:58 • (MSD) R4047128-5 03/19/24 01:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	0.0500	ND	0.0481	0.0485	96.1	96.9	1	90.0-110			0.820	20

L1715513-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1715513-01 03/19/24 02:37 • (MS) R4047128-7 03/19/24 02:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	0.0500	ND	0.0484	96.0	1	90.0-110	

L1715129-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1715129-04 03/16/24 15:10 • (DUP) R4046480-2 03/16/24 15:10

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.40	7.38	1	0.271		1

Sample Narrative:

OS: 7.4 at 20.5C

DUP: 7.38 at 20.2C

L1715169-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1715169-13 03/16/24 15:10 • (DUP) R4046480-3 03/16/24 15:10

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.86	7.82	1	0.510		1

Sample Narrative:

OS: 7.86 at 19C

DUP: 7.82 at 19.6C

Laboratory Control Sample (LCS)

(LCS) R4046480-1 03/16/24 15:10

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

Sample Narrative:

LCS: 10.01 at 20.2C

Method Blank (MB)

(MB) R4047549-1 03/19/24 18:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0396	0.200

Laboratory Control Sample (LCS)

(LCS) R4047549-2 03/19/24 18:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.971	97.1	85.0-115	

L1714020-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1714020-01 03/19/24 18:09 • (MS) R4047549-4 03/19/24 18:15 • (MSD) R4047549-5 03/19/24 18:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	0.531	1.53	1.50	99.5	96.7	1	70.0-130			1.81	20

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

Method Blank (MB)

(MB) R4048037-1 03/20/24 17:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.000195	0.00100
Barium	U		0.000476	0.00500
Cadmium	U		0.000160	0.00100
Copper	U		0.000670	0.00100
Lead	U		0.000513	0.00200
Nickel	U		0.000514	0.00200
Selenium	U		0.000437	0.00200
Silver	U		0.000144	0.00100
Zinc	U		0.00796	0.0200

Laboratory Control Sample (LCS)

(LCS) R4048037-2 03/20/24 17:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	0.0500	0.0511	102	85.0-115	
Barium	0.0500	0.0506	101	85.0-115	
Cadmium	0.0500	0.0517	103	85.0-115	
Copper	0.0500	0.0516	103	85.0-115	
Lead	0.0500	0.0506	101	85.0-115	
Nickel	0.0500	0.0518	104	85.0-115	
Selenium	0.0500	0.0492	98.5	85.0-115	
Silver	0.0500	0.0534	107	85.0-115	
Zinc	0.0500	0.0504	101	85.0-115	

L1715815-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1715815-01 03/20/24 17:59 • (MS) R4048037-4 03/20/24 18:05 • (MSD) R4048037-5 03/20/24 18:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	0.0500	ND	0.0539	0.0509	106	100	1	70.0-130			5.87	20
Barium	0.0500	0.00626	0.0585	0.0565	104	101	1	70.0-130			3.39	20
Cadmium	0.0500	ND	0.0535	0.0508	107	102	1	70.0-130			5.09	20
Copper	0.0500	ND	0.0527	0.0506	104	99.7	1	70.0-130			3.90	20
Lead	0.0500	ND	0.0499	0.0489	99.8	97.8	1	70.0-130			2.04	20
Nickel	0.0500	0.00297	0.0549	0.0522	104	98.4	1	70.0-130			5.02	20
Selenium	0.0500	ND	0.0512	0.0503	102	101	1	70.0-130			1.89	20
Silver	0.0500	ND	0.0552	0.0531	110	106	1	70.0-130			3.80	20
Zinc	0.0500	ND	0.0549	0.0525	110	105	1	70.0-130			4.47	20

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.
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
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	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.

Company Name/Address:
Caerus Oil & Gas

143 Diamond Ave
Parachute,CO 81635

Billing Information:
Same as left.

Pres Chk

Report to:
Blair Rollins

Email To:
brollins@caerusoilandgas.com

Project Description:
NPR SOURCE (CO4 696) Produced Water

City/State Collected: CO

Please Circle: PT MT CT ET

Phone:
(970) 640-6919

Client Project #

Lab Project #

Collected by (print):
B.Abetya

Site/Facility ID #
NPR SOURCE

P.O. #

Collected by (signature):
BA

Immediately
Packed on Ice N ____ Y X

Rush? (Lab MUST Be Notified)
____ Same Day __X__ Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Table 915 Metals - 250mL no prez	TABLE 915 pH- 250mL no prez								Remarks	Sample # (lab only)
20240313-NPR SOURCE-(CO4 696-1C-SEP)	Grab	WW	-	2024-03-13	0930	2	X	X									-01

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

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

SDG # L1715133
F173

Acctnum:
Template:
Prelogin:
PM:
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP Y __N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
If Applicable
VOA Zero Headspace: Y __N
Preservation Correct/Checked: Y __N
RAD Screen <0.5 mR/hr: Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
BA	3/13/24	1420			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.8 °C Bottles Received: 2	
	3/13/24	1590			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 3/14/24 Time: 0900	Hold: Conditions: NCF / OK
			Christopher L. Gallien		