August 18, 2022
Kleinfelder Project No. 20231065.001A

Mr. Jake Janicek
Caerus Piceance, LLC
1001 17th Street #1600
Denver, Colorado 80202

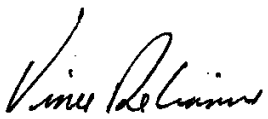
SUBJECT: **Site Investigation Report**
Caerus Piceance, LLC
Spill/Release Point ID # 482310
RA11 Pad
Garfield County, Colorado

Dear Mr. Janicek:

Kleinfelder Inc. (Kleinfelder) performed soil sampling activities at the RA11 Pad in Garfield County, Colorado under contract by Caerus Piceance LLC (Caerus). Enclosed is the report of work complete for this effort.

Please do not hesitate to contact me at (303) 319-2456 or by email at VDeCianne@kleinfelder.com should you have questions or concerns.

Respectfully submitted,
KLEINFELDER, INC.



Vince DeCianne
VP, Senior Principal Professional

KLEINFELDER 707 17th Street, Suite 3000, Denver, CO 80202 p | 303.237.6601 f | 303.237.6602

SITE INVESTIGATION REPORT
CAERUS PICEANCE, LLC
SPILL/RELEASE POINT ID # 482310
RA11 PAD
GARFIELD COUNTY, COLORADO

KLEINFELDER PROJECT NO. 20231065.001A

August 18, 2022

A Report Prepared for:

Caerus Piceance, LLC
1001 17th Street #1600
Denver, CO 80202

SITE INVESTIGATION REPORT
CAERUS PICEANCE, LLC
SPILL/RELEASE POINT ID # 482310
RA11 PAD
GARFIELD COUNTY, COLORADO

Prepared by:

Tristan Schmalz
Staff Professional I

Reviewed by:

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August 18, 2022
Kleinfelder Project No. 20231065.001A

Contents

Page

FIGURES

TABLES

APPENDICES

KLEINFELDER 707 17th Street, Suite 3000, Denver, CO 80202 p | 303.237.6601 f | 303.237.6602

SITE INVESTIGATION REPORT
CAERUS PICEANCE, LLC
SPILL/RELEASE POINT ID # 482310
RA11 PAD
GARFIELD COUNTY, COLORADO

1 INTRODUCTION

This document was prepared by Kleinfelder Inc. (Kleinfelder) on behalf of Caerus Piceance, LLC (Caerus) to provide documentation of recent sampling support services conducted at the RA11 Pad located in Garfield County, Colorado (**Figure 1**).

Kleinfelder has been contracted by Caerus to perform soil sampling support services to provide necessary information to complete the Colorado Oil and Gas Conservation Commission (COGCC) Form 27 for their upstream oil and gas production facilities located in the Piceance Basin. According to the COGCC Form 19 Spill / Release Report Approved (document # 403074356) provided to Kleinfelder by Caerus (**Appendix A),** a dumpline failure was identified upon the discovery of surfaced fluids at the RA11 Pad on April 22, 2022. Caerus proposed soil sampling to characterize the approximate release area from the reported spill under COGCC 913.c.(3) Rule 906: Remediation of Spill and Release pursuant to Rule 912. Kleinfelder collected the soil samples. Samples were analyzed by Pace Analytical National (Pace) laboratory and results are reported herein.

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2 SITE LOCATION AND GEOLOGIC SETTING

The RA11 Pad is located within the Piceance Basin in Garfield County, northwestern Colorado (NENE, Section 11, Township 7 South, Range 94 West) (**Figure 1**). The Piceance Basin is a geologic structural basin consisting of sandstones and siltstones, containing reserves of coal, natural gas, and oil shale.

No surface water or groundwater were encountered during Kleinfelder's soil sampling activities; however, pooling water of unknown origin was identified in the initial hydrovac excavation during both sampling events. Pooling water could have been the result of recent rainfall. Adjacent land was observed to be undeveloped land. The general soil type within the release area was classified based on Kleinfelder's field observations using the Unified Soil Classification System (USCS) and were observed as silty sands, sand-silt mixture. Topographical information is provided in **Figure 1**.

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3 FIELD ACTIVITIES

As prescribed within the approved COGCC Form 19 Spill / Release Report Initial Form, Kleinfelder performed the following field activities at the RA11 Pad on June 10, 2022, and July 7, 2022:

June 10, 2022

- Collected one (1) soil sample from the hydrovac excavation located at the point of release (POR). The sample was taken from the base of the excavation.
- Collected two (2) background soil samples from locations north and south of the pad.
- Shipped soil samples to Pace to analyze for the contaminants of concern listed within COGCC Table 915-1.

July 7, 2022

- Delineated the spill extent by field screening 11 potholes at varying depths for a total of 16 locations.
- Collected ten (10) soil samples from ten different potholes along the flowline to the north of the previously identified POR, as well as locations to the east, south, and west of the POR. Samples were taken from the base of the potholes.
- Shipped soil samples to Pace to analyze for the contaminants of concern listed within COGCC Table 915-1.

Caerus identified the soil sampling locations for the June 10th sampling event. For the July 7th sampling event, Kleinfelder was directed to field screen potholes to the north, south, east, and west of the POR and to continue potholing at Kleinfelder's discretion until the spill extent was thought to be delineated. Kleinfelder used an EOS Arrow 100 Submeter GNSS receiver to record latitude and longitude at each sample location, see **Table 1**. Sample locations are shown on **Figures 2a and 2b**.

Soil samples were collected from a stainless-steel hand auger and placed into two laboratory-supplied, 9-ounce jars with Teflon lids per sample. Each sample was collected directly from the hand auger from the appropriate depth and placed into the glass jars. The samples were

immediately placed on ice in a cooler. Standard chain-of-custody (COC) procedures were used during sampling and transportation to Pace in Mount Juliet, Tennessee (via FEDEX).

Release area (site) soil samples were analyzed for contaminants of concern listed in COGCC Table 915-1.

Background soil samples were analyzed for Specific Conductance (SC, also called Electrical Conductivity, EC), Sodium Absorption Ratio (SAR), Arsenic, Boron, and pH.

Sampling equipment (i.e., hand auger cutter head, soil sampler, etc.) was washed with a solution of Liquinox® detergent, rinsed with tap water, and then distilled water between samples.

During soil sampling activities, Kleinfelder documented staining and/or odor observations, if any, and screened the soil with a photoionization detector (PID). Kleinfelder placed the soil into a Ziploc® plastic bag directly from the hand auger for screening with the PID. The PID is a MiniRAE 3000®, which is owned and maintained by Caerus. Prior to use, Kleinfelder calibrated the PID, which passed calibration.

Soil sample conditions and observations are provided in **Table 1**.

4 RESULTS

Soil conditions within the release area were documented during the soil sampling activities. Hydrocarbon odor or soil staining was observed at the June 10th site sample location and 7 of the 16 July 7th sample locations. PID readings in the release area ranged from lower than one parts per million (PPM) to 1,946 PPM. **Table 1** summarizes the samples and associated field observations.

Analytical results are summarized in **Table 2** and compared to COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations as per the condition of approval (COA) in the COGCC Form 19 Spill / Release Report Approved (document # 403074356). Laboratory reports are provided in **Appendix C.** The following 15 contaminants of concern exceeded the COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations for at least one or more sample locations:

- TPH
- SAR
- pH
- Benzene
- 1,2,4-trimethylbenzene
- 1,3,5-trimethylbenzene
- 1-methylnaphthalene
- 2-methylnaphthalene
- Naphthalene
- Arsenic
- Barium
- Cadmium
- Chromium (VI)
- Lead
- Selenium

Arsenic was detected at concentrations above the Table 915-1 Protection of Groundwater Soil Screening Level Concentrations, but less than the site-specific background concentrations (per COGCC) at all but one sample location, which range from 4.88 to 10.6 mg/kg.

5 CONCLUSIONS AND RECOMMENDATIONS

15 contaminants of concern exceeded the COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations. Kleinfelder recommends the collection of additional background samples at approximately 1, 3, 5, 7, 9, 11, 13, and 15 feet below ground surface and compare to the analytical results from within the release area against the COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations. Samples will be collected east and west of the RA11 facility, from varying soil types, to more accurately reflect the soil types present at the facility. Also, a produced water sample shall be collected from one of the produced water tanks at the RA11 and analyze for pH and arsenic to compare against soil sample results. Additionally, per the COA in the COGCC Form 19 Spill / Release Report Approved (document # 403074356), a COGCC Form 27 Site Investigation and Remediation Workplan Initial Form should be provided as additional site investigation and remediation is recommended within the release area.

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6 LIMITATIONS

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that Caerus has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may have been discovered. Kleinfelder assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, or generator, or person who arranges for disposal, transport, storage, or treatment of hazardous materials within the meaning of any governmental statute, regulation, or order. Caerus is solely responsible for directing notification of all governmental agencies, and the public at large, of the existence, release, treatment, or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder's services. Caerus is responsible for directing all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder’s services.

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FIGURES

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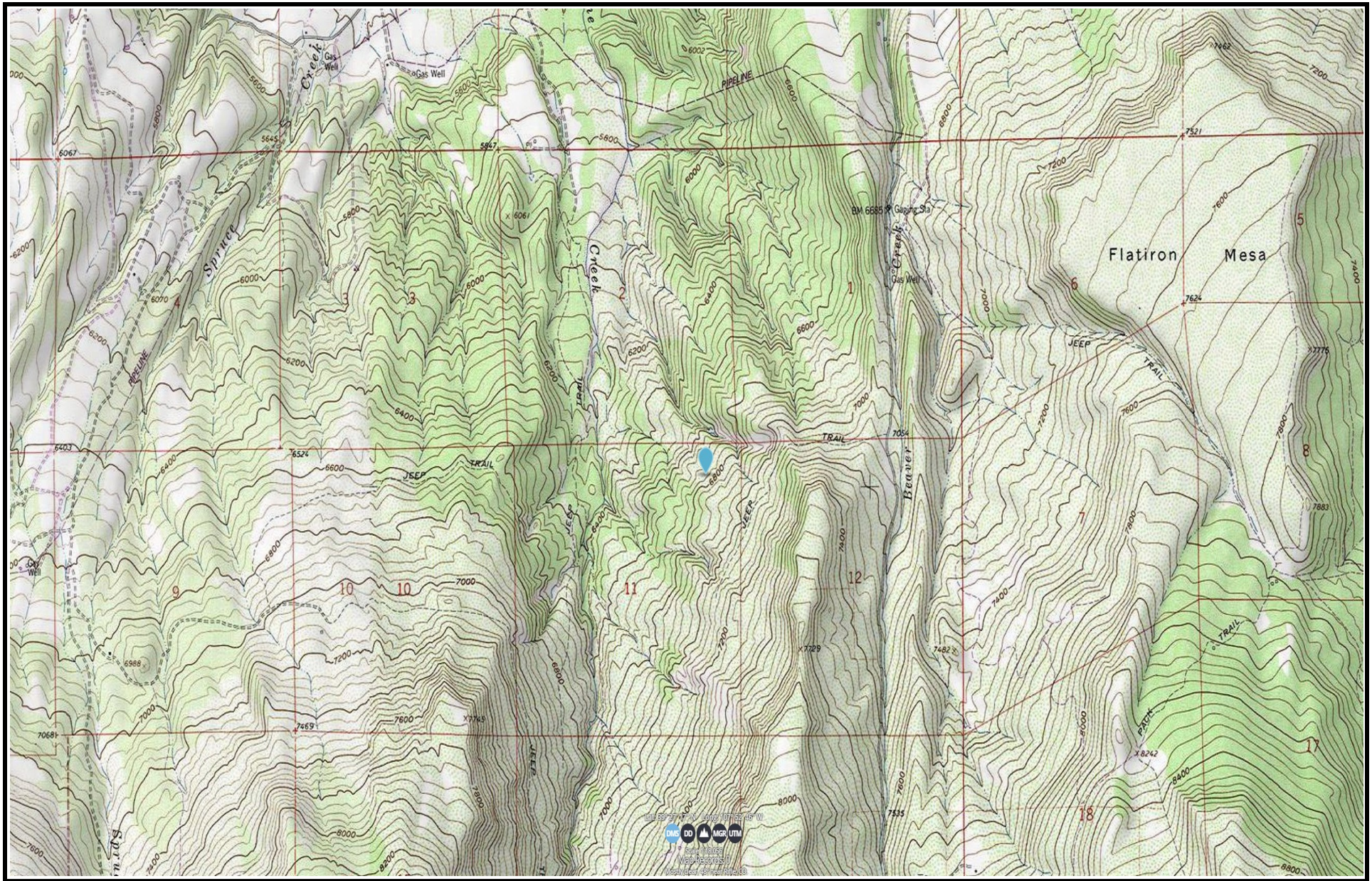

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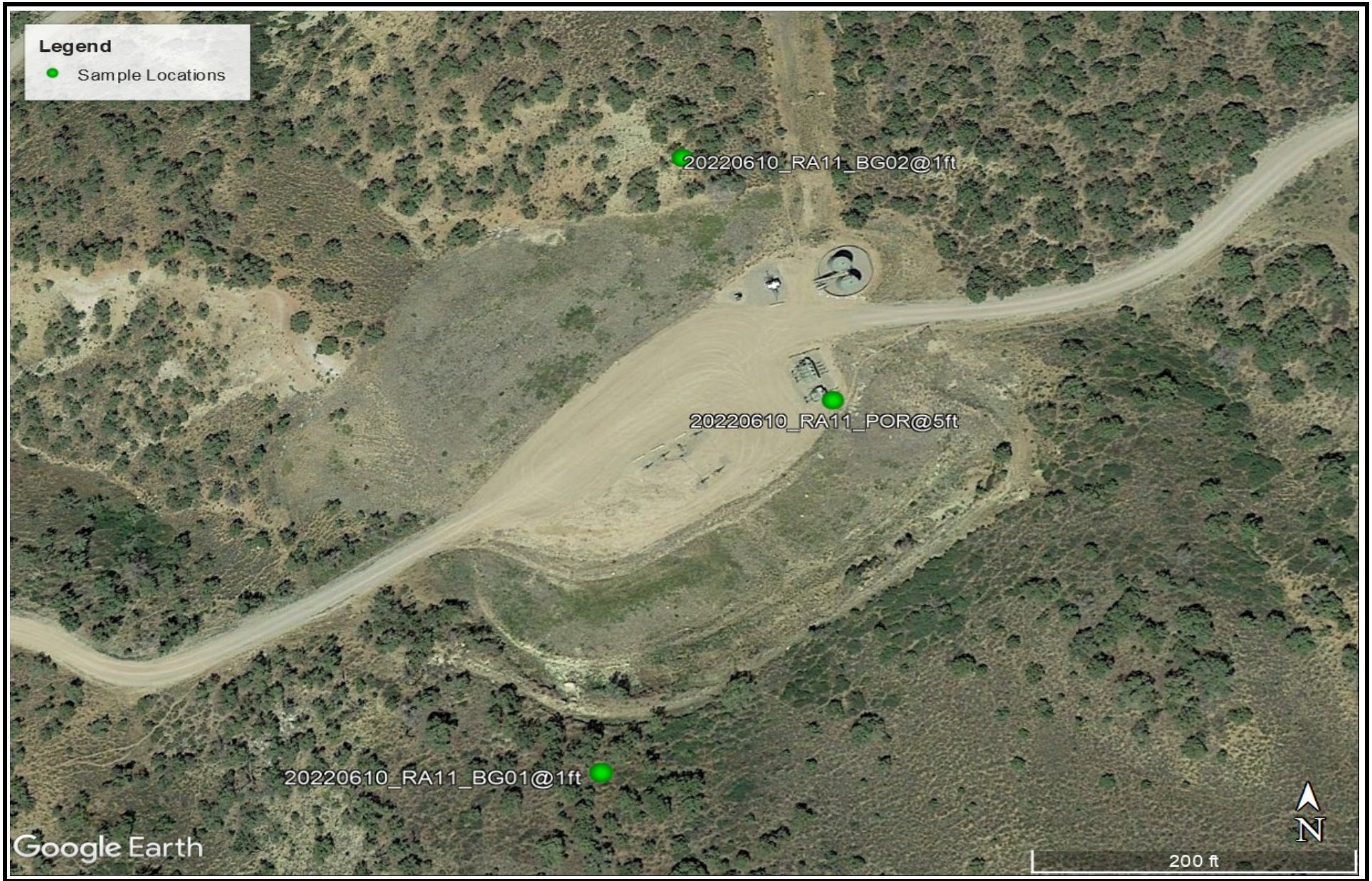
RA11 Pad Site Investigation
Caerus Piceance, LLC
NENE Sec. 11 T7S R94W
Garfield County, Colorado

PN 20231065.001A

Figure

1



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RA11 Pad Site Investigation
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NENE Sec. 11 T7S R94W
Garfield County, Colorado

PN 20231065.001A

Figure

2a

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RA11 Pad Site Investigation
Caerus Piceance, LLC
NENE Sec. 11 T7S R94W
Garfield County, Colorado

PN 20231065.001A

Figure

2b

TABLES

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Table 1

COGCC Soil Sampling

by **Jordan Veith** on **6/10/2022 & 7/7/2022**
for **Caerus RA 11 Site Investigation**

Caerus - Sampling Support Services
20221930.001A
DeCianne, Vincent G. (Vince)

Sample Register

Sample ID	Sample Type	Date	Time	Depth	PID (ppmv)	Odor	Staining	Comments
20220610_RA 11_BG01@1ft	Background	06/10/2022	10:45 AM	1 to 1	0	N	N	
20220610_RA 11_BG02@1ft	Background	06/10/2022	11:10 AM	1 to 1	0	N	N	Soil is light red/orange color.
20220610_RA 11_POR@5ft	Spill Area	06/10/2022	09:45 AM	5 to 5	552.4	Y	Y	Strong hydrocarbon odor detected around excavation. Small amount of unknown water source is pooled in base of excavation. Soil appears discolored.
20220707_RA 11_ PH01@2ft	Spill Area	07/07/2022	08:20 AM	2 to 2	50	N	N	No sample collected.
20220707_RA 11_ PH01@5ft	Spill Area	07/07/2022	08:43 AM	5 to 5	72	Y	Y	No sample collected.
20220707_RA 11_ PH02@5ft	Spill Area	07/07/2022	09:20 AM	5 to 5	0.8	N	N	Sample is saturated. Sample collected.
20220707_RA 11_ PH03@5ft	Spill Area	07/07/2022	09:45 AM	5 to 5	39.1	Y	N	Sample saturated. Sample collected.
20220707_RA 11_ PH04@5ft	Spill Area	07/07/2022	10:10 AM	5 to 5	76.4	Y	Y	Soil is saturated.
20220707_RA 11_ PH05@6ft	Spill Area	07/07/2022	10:45 AM	5 to 5	111.1	Y	Y	Soil is drying out. Sample collected.
20220707_RA 11_ PH07@5ft	Spill Area	07/07/2022	11:29 AM	5 to 5	1946	Y	Y	Very strong hydrocarbon scent.

Kleinfelder Representative *Signature*

Table 1

COGCC Soil Sampling

by **Jordan Veith** on **6/10/2022 & 7/7/2022**
for **Caerus RA 11 Site Investigation**

Caerus - 2022 Sampling Support Services
20231065.001A
DeCianne, Vincent G. (Vince)

Sample Register

Sample ID	Sample Type	Date	Time	Depth	PID (ppmv)	Odor	Staining	Comments
20220707_RA11_PH08@5ft	Spill Area	07/07/2022	12:10 PM	5 to 5	0.2	N	N	Soil Is saturated. Sample collected.
20220707_RA11_PH09@5ft	Spill Area	07/07/2022	12:25 PM	5 to 5	0.2	N	N	Soil is saturated. Sample collected.
20220707_RA11_PH10@5ft	Spill Area	07/07/2022	12:45 PM	5 to 5	0.5	N	N	Soil is moist. Sample collected.
20220707_RA11_PH06@6ft	Spill Area	07/07/2022	11:10 AM	6 to 6	0.2	N	N	Soil is saturated. Sample collected.
20220707_RA11_POR@7ft	Spill Area	07/07/2022	08:10 AM	7 to 7	2.4	N	N	Minimal hydrocarbon odor and staining observed. Sample is saturated. Sample collected.
20220707_RA11_PH01@7ft	Spill Area	07/07/2022	09:00 AM	7 to 7	60	Y	Y	Soil is saturated. Flush against south separator. Sample collected.
20220707_RA11_PH04@7ft	Spill Area	07/07/2022	10:25 AM	7 to 7	52.4	N	N	Sample is saturated.
20220707_RA11_PH07@7ft	Spill Area	07/07/2022	11:38 AM	7 to 7	250.5	Y	Y	High hydrocarbon scent.
20220707_RA11_PH07@9ft	Spill Area	07/07/2022	11:50 AM	9 to 9	17.6	N	N	Sample is saturated. Sample collected.

Kleinfelder Representative *Signature*

Table 2 - Soil Analytical Results Summary

		RA11												
		6/10/2022			7/7/2022									
Contaminant of Concern	**Cleanup Concentration (mg/kg unless otherwise noted)**	**20220610_RA11_BG01@1ft**	**20220610_RA11_BG02@1ft**	**20220610_RA11_POR@5ft**	**20220707_RA11_POR@7ft**	**20220707_RA11_PH01@7ft**	**20220707_RA11_PH02@5ft**	**20220707_RA11_PH03@5ft**	**20220707_RA11_PH05@6ft**	**20220707_RA11_PH06@6ft**	**20220707_RA11_PH07@9ft**	**20220707_RA11_PH08@5ft**	**20220707_RA11_PH09@5ft**	**20220707_RA11_PH10@5ft**
Soil TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons)	500	NM	NM	684.64	0.9681	113.76	8.283	121.39	37.77	1.1852	9.915	1.1674	1.7912	1.676
TPH Low Fraction GRO (C6-C10)		NM	NM	457	.0531U	4.39	4.55	7.47	7.04	0.0552 J	4.09	0.0574 J	0.0312 J	0.0560 J
DRO (C10-C28)		NM	NM	222	U	102	3.18 J	106 J3 J5	28.6	U	5.54	U	U	U
MRO (C28-C36)		NM	NM	5.64	0.915	7.37	0.553 J	7.92	2.13 J	1.13 J	0.285 J	1.11 J	1.76 J	1.62 J
Soils and Groundwater - liquid hydrocarbons including condensate and oil	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits	Below Visual Detection Limits
Electrical conductivity (EC) (by saturated paste method)	<4mmhos/cm	0.524	0.0386	1.94	0.523	1.00	0.779	1.77	1.05	0.296	0.233	0.322	0.206	0.234
Sodium adsorption ratio (SAR) (by saturated paste method)	<6 SAR units	3.47	0.031	14.3	10.9	19.9	17.3	21.0	13.9	1.17	0.998	0.579	0.631	1.19
pH (by saturated paste method)	6–8.3 pH units	8.15 T8	6.89 T8	7.79 T8	9.00 T8	9.51 T8	9.04 T8	8.62 T8	8.96 T8	8.22 T8	8.31 T8	8.71 T8	8.34 T8	8.56 T8
Boron (hot water soluble soil extract)	2 mg/L	NM	NM	0.389	0.285	0.257J	0.251	0.261	0.157 J	0.261	0.206	0.292	0.271	0.277
Organic Compounds in Soils	**Residential Soil Screening Level Concentrations**	**Protection of Groundwater Soil Screening Level Concentrations Risk Based and MCL Based**												
benzene	1.2	0.0026	NM	NM	0.0986	U	0.00057SJ	0.0111	0.00131	U	U	0.0652	U	U	U
toluene	490	0.69	NM	NM	1.43	.00197J	0.00143J	0.0274	0.00265 J	U	U	0.244	0.00222 J	U	U
ethylbenzene	5.8	0.78	NM	NM	0.345	U	0.00328	0.0145	0.0573	0.0148	U	0.0266	U	U	U
xylenes (sum of o-, m- and p- isomers = total xylenes)	58	9.9	NM	NM	8.75	.00175J	0.00403J	0.203	0.0321	0.0577	0.00456 J	0.551	0.00460 J	U	0.00320 J
1,2,4-trimethylbenzene	30	0.0081	NM	NM	2.04	U	0.0107	0.0373	0.561	0.385	U	0.0798	U	U	U
1,3,5-trimethylbenzene	27	0.0087	NM	NM	2.14	U	0.133	0.0383	1.63	0.0344	U	0.0779	U	U	U
acenaphthene	360	0.55	NM	NM	U	U	U	U	0.0120	U	U	U	U	U	U
anthracene	1800	5.8	NM	NM	U	U	U	U	U	U	U	U	U	U	0.00281 J
benz(a)anthracene	1.1	0.011	NM	NM	U	U	U	U	U	U	U	U	U	U	0.00204 J
benzo(b)fluoranthene	1.1	0.3	NM	NM	U	U	U	U	U	U	U	U	U	U	U
benzo(k)fluoranthene	11	2.9	NM	NM	U	U	U	U	U	U	U	U	U	U	U
benzo(a)pyrene	0.11	0.24	NM	NM	U	U	U	U	U	U	U	U	U	U	U
chrysene	110	9	NM	NM	U	U	U	U	U	U	U	U	U	U	U
dibenz(a,h)anthracene	0.11	0.096	NM	NM	U	U	U	U	U	U	U	U	U	U	U
fluoranthene	240	8.9	NM	NM	U	U	U	U	U	U	U	U	U	U	0.00892
fluorene	240	0.54	NM	NM	0.0155	U	0.00590J	U	0.0402	0.00657	U	U	U	U	U
indeno(1,2,3-cd)pyrene	1.1	0.98	NM	NM	U	U	U	U	U	U	U	U	U	U	U
pyrene	180	1.3	NM	NM	U	U	U	U	0.00552 J	U	U	U	U	U	0.00609
1-methylnaphthalene	18	0.006	NM	NM	0.2	U	0.013IJ	U	0.187	0.00739 J	U	0.00735 J	U	U	U
2-methylnaphthalene	24	0.019	NM	NM	0.609	U	0.047IJ	U	0.392	0.0124 J	U	0.0230	U	U	U
naphthalene	2	0.0038	NM	NM	0.269	U	0.00867J	U	0.110	U	U	0.0100 J	U	U	U
Metals in Soils	**Residential Soil Screening Level Concentrations**	**Protection of Groundwater Soil Screening Level Concentrations Risk Based and MCL Based**												
arsenic	0.68	0.29	10.6	4.88	3.12	5.04	8.39	3.75	7.79	6.86	9.63	17.0	5.97	4.65	4.09
barium	15000	82	NM	NM	1190	98.3	1600	84.1	1730	307	134	75.5	127	185	160
cadmium	71	0.38	NM	NM	0.331 J	0.495J	0.446J	0.617	0.454 J	0.517	0.406 J	0.610	0.403 J	0.367 J	0.552
chromium (VI)	0.3	0.00067	NM	NM	0.319 J	U	U J6	U	0.283 J	U	U	U	U	0.309 J	U
copper	3100	46	NM	NM	18.7	11.0	12.8	9.52	14.5	13.3	12.0	26.0	12.4	13.0	11.8
lead	400	14	NM	NM	9.23	9.66	10.4	9.75	12.3	9.60	11.0	22.3	10.9	11.1	9.09
nickel	1500	26	NM	NM	11.3	15.9	13.9	12.3	16.6	15.2	14.4	14.9	16.1	15.3	14.1
selenium	390	0.26	NM	NM	U	U	U	U	U	U	U	6.26	U	U	U
silver	390	0.8	NM	NM	U	U	U	U	U	U	U	U	U	U	U
zinc	23000	370	NM	NM	44.5	54.3	47.2	40.9	53.4	51.6	49.1	71.8	54.3	53.9	47.6

NOTES:

Greater than Table 915-1 Protection of Groundwater Soil Screening Level Concentrations Risk Based and MCL Basec

Greater than Table 915-1 STandards, but less than adjusted standards (Highest background level is the adjusted standard for inorganics; 1.25X highest background level for metals;

BG = background sample
C = carbon range
COGCC = Colorado Oil and Gas Conservation Commission
ft bgs = feet below ground surface
GC/FID = gas chromatography with flame ionization detector
J = The identification of the analyte is acceptable: the reported value is an estimat
MCL = maximum contaminant leve
mg/kg = milligram per kilogram
mg/L = milligram per liter
mmhos/cm = millimhos per centimeter
N/A = Not applicable. No COGCC cleanup concentration provided
PH = pothole
SB = soil boring
TB = Samples received past/too close to holding time expiration
U = Not detected at the Reporting Limit (or MDL where applicable)
WH = wellhead

APPENDIX A

COGCC FORM 19 SPILL / RELEASE REPORTS

KLEINFELDER 707 17th Street, Suite 3000, Denver, CO 80202 p | 303.237.6601 f | 303.237.6602

FORM 19 Rev 03/21

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number: 403074356
Date Received: 06/09/2022

Spill report taken by: FISCHER, ALEX

Spill/Release Point ID: 482310

SPILL/RELEASE REPORT (INITIAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 912.b. for reporting requirements of spills or releases of E&P Waste, produced Fluids, or unauthorized Releases of natural gas. Submit a Site Investigation and Remediation Workplan (Form 27) if Rule 913.c. applies.

OPERATOR INFORMATON

Name of Operator: CAERUS PICEANCE LLC Operator No: 10456
Address: 1001 17TH STREET #1600
City: DENVER State: CO Zip: 80202
Contact Person: Brett Middleton

Phone Numbers
Phone: (970) 285.2739
Mobile: (970) 987.4650
Email: bmiddleton@caerusoilandgas.com

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 403074356

Initial Report Date: 06/09/2022 Date of Discovery: 06/09/2022 Spill Type: Recent Spill

Spill/Release Point Location:

QTRQTR NENE SEC 11 TWP 7S RNG 94W MERIDIAN 6
Latitude: 39.458841 Longitude: -107.847325
`Municipality (if within municipal boundaries): County: GARFIELD

Enter Lat./long measurement of the actual Spill/Release Point. Lat./Long. Data shall meet standards of Rule 216.

Reference Location:

Facility Type: WELL SITE [X] Facility/Location ID No 334688
Spill/Release Point Name: RA11 Dumpline Release
[ ] Well API No. (Only if the reference facility is well) 05- -
[ ] No Existing Facility or Location ID No.

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): 0
Estimated Condensate Spill Volume(bbl): Unknown
Estimated Flow Back Fluid Spill Volume(bbl): 0
Estimated Produced Water Spill Volume(bbl): Unknown
Estimated Other E&P Waste Spill Volume(bbl): 0
Estimated Drilling Fluid Spill Volume(bbl): 0
Specify:

Has the subject Spill/Release been controlled at the time of reporting? Yes

Land Use:

Current Land Use: NON-CROP LAND Other(Specify):
Weather Condition: clear
Surface Owner: FEDERAL Other(Specify): BLM

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

Operator identified a dumpline failure which surfaced on location.

List of Agencies and Other Parties Notified Pursuant to Rule 912.b.(7)-(11):

OTHER NOTIFICATIONS

Date	Agency/Party	Contact	Phone	Response
6/9/2022	GARCO	Kirby Wynn	970-987..2557	email
6/9/2022	BLM	Doug Jones	970-309.2188	email
6/9/2022	CPW	Taylor Elm	970-986.9767	email

REPORT CRITERIA

Rule 912.b.(1) Report to the Director (select all criteria that apply):

No — Rule 912.b.(1).A: A Spill or Release of any size that impacts or threatens to impact any Waters of the State, Public Water System, residence or occupied structure, livestock, wildlife, or publicly-maintained road.

Waters of the State: _____ Public Water System: _____

Residence or Occupied Structure: _____ Livestock: _____

Wildlife: _____ Publicly-Maintained Road: _____

Yes — Rule 912.b.(1).B: A Spill or Release in which 1 barrel or more of E&P Waste or produced fluids is spilled or released outside of berms or other secondary containment.

No — Rule 912.b.(1).C: A Spill or Release of 5 barrels or more of E&P Waste or produced Fluids regardless of whether the Spill or Release is completely contained within berms or other secondary containment.

No — Rule 912.b.(1).D: Within 6 hours of discovery, a Grade 1 Gas Leak. For a Grade 1 Gas Leak from a Flowline, the Operator also must submit the Form 19 – Initial, document number on a Form 44, Flowline Report, for the Grade 1 Gas Leak

Enter the approximate time of discovery _____(HH:MM)

Enter the Document Number of the Grade 1 Gas Leak Report, Form 44 _____

Was there a reportable accident associated with either a Grade 1 Gas Leak or an E&P waste spill or release? _____

Enter the Document Number of the Initial Accident Report, Form 22 _____

Was there damage during excavation? _____

Was CO 811 notified prior to excavation? _____

No — Rule 912.b.(1).E: The discovery of 10 cubic yards or more of impacted material resulting from a current or historic Spill or Release. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards.

Estimated Volume of Impacted Solids (cu. yd.): _____

No — Rule 912.b.(1).F: The discovery of impacted Waters of the State, including Groundwater. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards. The presence of free product or hydrocarbon sheen on Groundwater or surface water is reportable. The presence of contaminated soil in contact with Groundwater or surface water is reportable. Check all that apply:

- ☐ The presence of free product or hydrocarbon sheen Surface Water
- ☐ The presence of free product or hydrocarbon sheen on Groundwater
- ☐ The presence of contaminated soil in contact with Groundwater
- ☐ The presence of contaminated soil in contact with Surface water

Yes — Rule 912.b.(1).G: A suspected or actual Spill or Release of any volume where the volume cannot be immediately determined, including a spill or release of any volume that daylights from the subsurface.

No — Rule 912.b.(1).H: Spill or Release resulting in vaporized hydrocarbon mists that leave the Oil and Gas Location or Off-Location Flowline right of way from an Oil and Gas Location and impacts or threatens to impact off-location property.

☐ Areas offsite of Oil & Gas Location ☐ Off-Location Flowline right of way

No — Rule 912.b.(1).I: A Release of natural gas that results in an accumulation of soil gas or gas seeps.

No — Rule 912.b.(1).J: A Release that results in natural gas in Groundwater.

OPERATOR COMMENTS:

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: Print Name: Brett Middleton

Title: Environmental Lead Date: 06/09/2022 Email: bmiddleton@caerusoilandgas.com

Condition of Approval

COA Type	Description
	Assess nature and extent of contamination with confirmation soil samples. The operator shall comply with Rule 915.e.(2) for collection of soil samples. The operator shall notify the COGCC and comply with Rule 915.e.(3) if groundwater is encountered during cleanup operations.
	Operator shall collect sample(s) from comparable, nearby non-impacted native soil for purposes of establishing background soil conditions including pH, electrical conductivity (EC) and sodium adsorption ratio (SAR), per Rule 915.e.(2).D.
	Submit photo documentation, as described in Rule 912.b.(4).B, via a Supplemental Form 19.
	Additional information required by Rule 912.b.(4) shall be submitted on a supplemental spill report no later than ten days after discovery (reported Discovery Date: 06/09/2022). Within 90 days of spill discovery date, Operator shall comply with Spill/Release closure requirements outlined in Rule 912.b.(6).
	In the Supplemental eForm 19, identify the root cause of the failure and explain how reoccurrence on this flowline and the other flowlines associated with this pad will be prevented, per Rule 912.d.(3). Operator shall coordinate with COGCC Integrity Unit, Mark Schlagenhauf, regarding dumpline excavation, assessment, and repair.
	Delineate horizontal and vertical extent of impacted area using the Table 915-1 Protection of Groundwater Soil Screening Level Concentrations and remediate impacts to Table 915-1 standards. Provide documentation in either a Supplemental eForm 19 if cleaned up immediately and/or Initial eForm 27 if additional site investigation and remediation is required OR if groundwater is encountered during cleanup operations. Documentation must include a figure showing spill area with sample locations plus laboratory results.
6 COAs	

Attachment List

Att Doc Num	Name
403074356	SPILL/RELEASE REPORT(INITIAL)
403074813	FORM 19 SUBMITTED

Total Attach: 2 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

FORM 19 Rev 03/21

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number: 403082834
Date Received: 06/17/2022

Spill report taken by: FISCHER, ALEX

Spill/Release Point ID: 482310

SPILL/RELEASE REPORT (SUPPLEMENTAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 912.b. for reporting requirements of spills or releases of E&P Waste, produced Fluids, or unauthorized Releases of natural gas. Submit a Site Investigation and Remediation Workplan (Form 27) if Rule 913.c. applies.

OPERATOR INFORMATON

Name of Operator: CAERUS PICEANCE LLC Operator No: 10456

Address: 1001 17TH STREET #1600

City: DENVER State: CO Zip: 80202

Contact Person: Jake Janicek

Phone Numbers

Phone: (970) 778-2314

Mobile: (970) 778-2314

Email: jjanicek@caerusoilandgas.com

☐ Transfer of Operatorship: Pursuant to Rule 912.f, this Supplemental Form 19 is being submitted to designate the Buying Operator as the responsible Operator for this Spill and Release.

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 403074356

Initial Report Date: 06/09/2022 Date of Discovery: 06/09/2022 Spill Type: Recent Spill

Spill/Release Point Location:

QTRQTR NENE SEC 11 TWP 7S RNG 94W MERIDIAN 6

Latitude: 39.458867 Longitude: -107.847270

`Municipality (if within municipal boundaries): County: GARFIELD

Enter Lat./long measurement of the actual Spill/Release Point. Lat./Long. Data shall meet standards of Rule 216.

Reference Location:

Facility Type: WELL SITE ☒ Facility/Location ID No 334688

Spill/Release Point Name: RA11 Dumpline Release ☐ Well API No. (Only if the reference facility is well) 05- -

☐ No Existing Facility or Location ID No.

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): 0 Estimated Condensate Spill Volume(bbl): Unknown

Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water Spill Volume(bbl): Unknown

Estimated Other E&P Waste Spill Volume(bbl): 0 Estimated Drilling Fluid Spill Volume(bbl): 0

Specify:

Has the subject Spill/Release been controlled at the time of reporting? Yes

Land Use:

Current Land Use: NON-CROP LAND Other(Specify):

Weather Condition: clear

Surface Owner: FEDERAL Other(Specify): BLM

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

Operator identified a dumpline failure which surfaced on location.

List of Agencies and Other Parties Notified Pursuant to Rule 912.b.(7)-(11):

OTHER NOTIFICATIONS

Date	Agency/Party	Contact	Phone	Response
6/9/2022	GARCO	Kirby Wynn	970-987..2557	email
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REPORT CRITERIA

Rule 912.b.(1) Report to the Director (select all criteria that apply):

No — Rule 912.b.(1).A: A Spill or Release of any size that impacts or threatens to impact any Waters of the State, Public Water System, residence or occupied structure, livestock, wildlife, or publicly-maintained road.

Waters of the State: _____ Public Water System: _____

Residence or Occupied Structure: _____ Livestock: _____

Wildlife: _____ Publicly-Maintained Road: _____

Yes — Rule 912.b.(1).B: A Spill or Release in which 1 barrel or more of E&P Waste or produced fluids is spilled or released outside of berms or other secondary containment.

No — Rule 912.b.(1).C: A Spill or Release of 5 barrels or more of E&P Waste or produced Fluids regardless of whether the Spill or Release is completely contained within berms or other secondary containment.

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Enter the approximate time of discovery _____(HH:MM)

Enter the Document Number of the Grade 1 Gas Leak Report, Form 44 _____

Was there a reportable accident associated with either a Grade 1 Gas Leak or an E&P waste spill or release? _____

Enter the Document Number of the Initial Accident Report, Form 22 _____

Was there damage during excavation? _____

Was CO 811 notified prior to excavation? _____

No — Rule 912.b.(1).E: The discovery of 10 cubic yards or more of impacted material resulting from a current or historic Spill or Release. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards.

Estimated Volume of Impacted Solids (cu. yd.): _____

No — Rule 912.b.(1).F: The discovery of impacted Waters of the State, including Groundwater. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards. The presence of free product or hydrocarbon sheen on Groundwater or surface water is reportable. The presence of contaminated soil in contact with Groundwater or surface water is reportable. Check all that apply:

- ☐ The presence of free product or hydrocarbon sheen Surface Water
- ☐ The presence of free product or hydrocarbon sheen on Groundwater
- ☐ The presence of contaminated soil in contact with Groundwater
- ☐ The presence of contaminated soil in contact with Surface water

Yes — Rule 912.b.(1).G: A suspected or actual Spill or Release of any volume where the volume cannot be immediately determined, including a spill or release of any volume that daylights from the subsurface.

No — Rule 912.b.(1).H: Spill or Release resulting in vaporized hydrocarbon mists that leave the Oil and Gas Location or Off-Location Flowline right of way from an Oil and Gas Location and impacts or threatens to impact off-location property.

☐ Areas offsite of Oil & Gas Location ☐ Off-Location Flowline right of way

No — Rule 912.b.(1).I: A Release of natural gas that results in an accumulation of soil gas or gas seeps.

No — Rule 912.b.(1).J: A Release that results in natural gas in Groundwater.

SPILL/RELEASE DETAIL REPORTS

#1 Supplemental Report Date: 06/17/2022

FLUIDS	BBL's SPILLED	BBL's RECOVERED	Unknown
OIL	0	0	☐
CONDENSATE	0	0	☐
PRODUCED WATER			☒
DRILLING FLUID	0	0	☐
FLOW BACK FLUID	0	0	☐
OTHER E&P WASTE	0	0	☐

specify:

Was spill/release completely contained within berms or secondary containment? NO Was an Emergency Pit constructed? NO

*Secondary containment, **including walls & floor regardless of construction material**, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.*

A Form 15 Pit Report shall be submitted within 30 calendar days after the construction of an emergency pit

Impacted Media (Check all that apply) ☒ Soil ☐ Groundwater ☐ Surface Water ☐ Dry Drainage Feature

Surface Area Impacted: Length of Impact (feet): Width of Impact (feet):

Depth of Impact (feet BGS): Depth of Impact (inches BGS):

How was extent determined?

It will be determined via field observations and laboratory analytical data of soil samples.

Soil/Geology Description:

Torriorthents-Rock outcrop complex, steep

Depth to Groundwater (feet BGS) 650 Number Water Wells within 1/2 mile radius: 1

If less than 1 mile, distance in feet to nearest

Water Well	2386	None ☐	Surface Water	2778	None ☐
Wetlands		None ☒	Springs		None ☒
Livestock		None ☒	Occupied Building	2558	None ☐

Additional Spill Details Not Provided Above:

The depth to groundwater value listed above is an estimate based on the nearest water well which is identified as DWR Permit # 177190. Documents associated with that well list that the well was drilled to 600 feet and no water was found.

REQUEST FOR CLOSURE

Spill/Release Reports should be closed when impacts have been remediated or when further investigation and corrective actions will take place under an approved Form 27.

Basis for Closure:

- [ ] Corrective Actions Completed (documentation attached, check all that apply)
  - [ ] Horizontal and Vertical extents of impacts have been delineated.
  - [ ] Documentation of compliance with Table 915-1 is attached.
  - [ ] All E&P Waste has been properly treated or disposed.
- [ ] Work proceeding under an approved Form 27 (Rule 912.c).
  - Form 27 Remediation Project No: _____
- [ ] SUSPECTED Spill/Release did not occur or was below Rule 912.a.(5) reporting thresholds.

OPERATOR COMMENTS:

Please see attached photo documentation for photographs of the failure point. The GPS coordinates were also updated in the "Spill/Release Point Location" section of this form.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: _____ Print Name: Jake Janicek

Title: EHS Specialist Date: 06/17/2022 Email: jjanicek@caerusoilandgas.com

Condition of Approval

COA Type	Description
0 COA	

Attachment List

Att Doc Num	Name
403082834	SPILL/RELEASE REPORT(SUPPLEMENTAL)
403082845	PHOTO DOCUMENTATION
403082848	TOPOGRAPHIC MAP
403089051	FORM 19 SUBMITTED

Total Attach: 4 Files

General Comments

User Group	Comment	Comment Date
Environmental	Comply with outstanding COAs.	06/24/2022

Total: 1 comment(s)

APPENDIX B

LABORATORY ANALYTICAL REPORTS

KLEINFELDER 707 17th Street, Suite 3000, Denver, CO 80202 p | 303.237.6601 f | 303.237.6602

ANALYTICAL REPORT

July 06, 2022

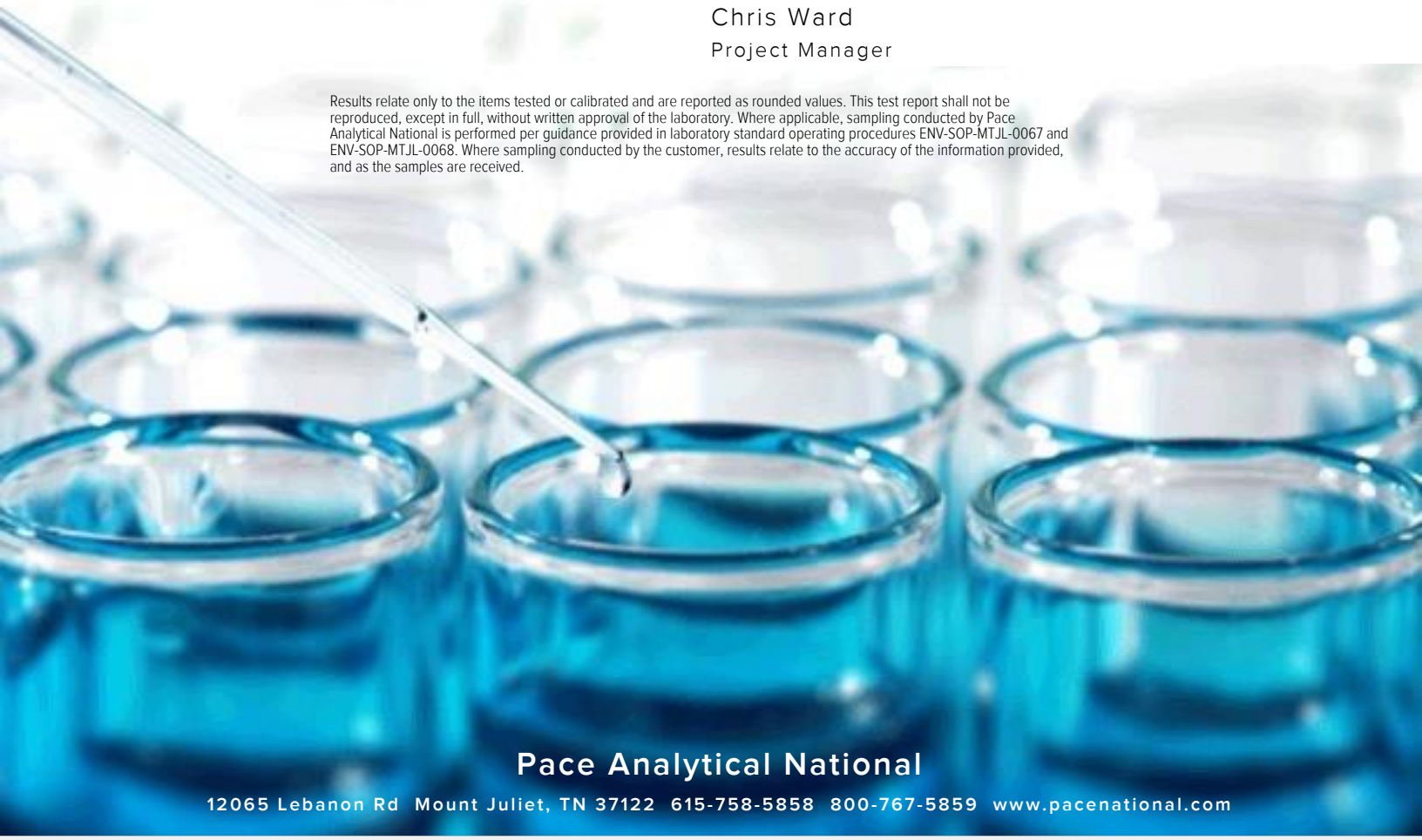
Caerus Oil and Gas

Sample Delivery Group:	L1504169
Samples Received:	06/11/2022
Project Number:	RA11 PAD
Description:	RA11 Flowline Investigation

Report To: Brett Middleton
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

20220610_RA11_POR@5FT L1504169-01 Solid

Collected by: Jordan Veith
Collected date/time: 06/10/22 09:45
Received date/time: 06/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1883524	1	06/27/22 00:55	06/27/22 00:55	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1882511	1	06/20/22 19:00	06/22/22 11:12	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1880560	1	06/16/22 08:00	06/18/22 09:30	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880273	1	06/19/22 07:57	06/20/22 11:10	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1881973	1	06/20/22 07:12	06/21/22 00:09	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1887976	1	06/30/22 20:04	07/05/22 14:38	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1881977	5	06/20/22 07:02	06/20/22 23:04	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1881456	100	06/16/22 11:38	06/18/22 11:22	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1881396	8	06/16/22 11:38	06/18/22 08:15	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1883632	1	06/23/22 00:22	06/23/22 09:53	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1883627	1	06/22/22 18:14	06/23/22 07:38	AGW	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	14.3		1	06/27/2022 00:55	WG1883524

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.319	J	0.255	1.00	1	06/22/2022 11:12	WG1882511

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	7.79	T8	1	06/18/2022 09:30	WG1880560

Sample Narrative:

L1504169-01 WG1880560: 7.79 at 21.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1940		10.0	1	06/20/2022 11:10	WG1880273

Sample Narrative:

L1504169-01 WG1880273: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	1190		0.0852	0.500	1	06/21/2022 00:09	WG1881973
Cadmium	0.331	J	0.0471	0.500	1	06/21/2022 00:09	WG1881973
Copper	18.7		0.400	2.00	1	06/21/2022 00:09	WG1881973
Lead	9.23		0.208	0.500	1	06/21/2022 00:09	WG1881973
Nickel	11.3		0.132	2.00	1	06/21/2022 00:09	WG1881973
Selenium	U		0.764	2.00	1	06/21/2022 00:09	WG1881973
Silver	U		0.127	1.00	1	06/21/2022 00:09	WG1881973
Zinc	44.5		0.832	5.00	1	06/21/2022 00:09	WG1881973

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.389		0.0167	0.200	1	07/05/2022 14:38	WG1887976

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.12		0.100	1.00	5	06/20/2022 23:04	WG1881977

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	457		2.17	10.0	100	06/18/2022 11:22	WG1881456
(S) a,a,a-Trifluorotoluene(FID)	*79.5*			*77.0-120*		*06/18/2022 11:22*	WG1881456

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0986		0.00374	0.00800	8	06/18/2022 08:15	WG1881396
Toluene	1.43		0.0104	0.0400	8	06/18/2022 08:15	WG1881396
Ethylbenzene	0.345		0.00590	0.0200	8	06/18/2022 08:15	WG1881396
Xylenes, Total	8.75		0.00704	0.0520	8	06/18/2022 08:15	WG1881396
1,2,4-Trimethylbenzene	2.04		0.0126	0.0400	8	06/18/2022 08:15	WG1881396
1,3,5-Trimethylbenzene	2.14		0.0160	0.0400	8	06/18/2022 08:15	WG1881396
(S) Toluene-d8	*96.1*			*75.0-131*		*06/18/2022 08:15*	WG1881396
(S) 4-Bromofluorobenzene	*104*			*67.0-138*		*06/18/2022 08:15*	WG1881396
(S) 1,2-Dichloroethane-d4	*90.4*			*70.0-130*		*06/18/2022 08:15*	WG1881396

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	222		1.61	4.00	1	06/23/2022 09:53	WG1883632
C28-C36 Motor Oil Range	5.64		0.274	4.00	1	06/23/2022 09:53	WG1883632
(S) o-Terphenyl	*59.0*			*18.0-148*		*06/23/2022 09:53*	WG1883632

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	06/23/2022 07:38	WG1883627
Anthracene	U		0.00230	0.00600	1	06/23/2022 07:38	WG1883627
Benzo(a)anthracene	U		0.00173	0.00600	1	06/23/2022 07:38	WG1883627
Benzo(b)fluoranthene	U		0.00153	0.00600	1	06/23/2022 07:38	WG1883627
Benzo(k)fluoranthene	U		0.00215	0.00600	1	06/23/2022 07:38	WG1883627
Benzo(a)pyrene	U		0.00179	0.00600	1	06/23/2022 07:38	WG1883627
Chrysene	U		0.00232	0.00600	1	06/23/2022 07:38	WG1883627
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	06/23/2022 07:38	WG1883627
Fluoranthene	U		0.00227	0.00600	1	06/23/2022 07:38	WG1883627
Fluorene	0.0155		0.00205	0.00600	1	06/23/2022 07:38	WG1883627
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	06/23/2022 07:38	WG1883627
1-Methylnaphthalene	0.200		0.00449	0.0200	1	06/23/2022 07:38	WG1883627
2-Methylnaphthalene	0.609	J4	0.00427	0.0200	1	06/23/2022 07:38	WG1883627
Naphthalene	0.269		0.00408	0.0200	1	06/23/2022 07:38	WG1883627
Pyrene	U		0.00200	0.00600	1	06/23/2022 07:38	WG1883627
(S) p-Terphenyl-d14	*82.3*			*23.0-120*		*06/23/2022 07:38*	WG1883627
(S) Nitrobenzene-d5	*587*	J1		*14.0-149*		*06/23/2022 07:38*	WG1883627
(S) 2-Fluorobiphenyl	*59.4*			*34.0-125*		*06/23/2022 07:38*	WG1883627

Sample Narrative:

L1504169-01 WG1883627: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3806158-1 06/22/22 10:02

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

L1504138-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504138-01 06/22/22 10:35 • (DUP) R3806158-3 06/22/22 10:41

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.757	0.592	1	24.4	J P1	20

L1504175-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504175-01 06/22/22 12:09 • (DUP) R3806158-8 06/22/22 12:14

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.592	0.487	1	19.4	J	20

Laboratory Control Sample (LCS)

(LCS) R3806158-2 06/22/22 10:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.77	97.7	80.0-120	

L1504171-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504171-01 06/22/22 11:17 • (MS) R3806158-5 06/22/22 11:27 • (MSD) R3806158-6 06/22/22 11:32

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 %
Hexavalent Chromium	20.0	1.14	12.2	4.36	55.2	16.1	1	75.0-125	J6	J3 J6	94.5	20

L1504171-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1504171-01 06/22/22 11:17 • (MS) R3806158-9 06/22/22 11:38

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	682	1.14	505	74.1	50	75.0-125	J6

L1500823-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1500823-01 06/18/22 09:30 • (DUP) R3804583-2 06/18/22 09:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.19	7.20	1	0.139		1

Sample Narrative:

OS: 7.19 at 22C

DUP: 7.2 at 22C

Laboratory Control Sample (LCS)

(LCS) R3804583-1 06/18/22 09:30

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

Sample Narrative:

LCS: 9.9 at 21.9C

Method Blank (MB)

(MB) R3804957-1 06/20/22 11:10

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

Sample Narrative:
BLANK: at 25C

L1502452-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1502452-02 06/20/22 11:10 • (DUP) R3804957-3 06/20/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1980	1980	1	0.000		20

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

L1504180-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1504180-02 06/20/22 11:10 • (DUP) R3804957-4 06/20/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	880	829	1	5.97		20

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

Laboratory Control Sample (LCS)

(LCS) R3804957-2 06/20/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	280	105	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3805291-1 06/21/22 00:04

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

Laboratory Control Sample (LCS)

(LCS) R3805291-2 06/21/22 00:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	98.5	98.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	99.2	99.2	80.0-120	
Nickel	100	99.6	99.6	80.0-120	
Selenium	100	99.3	99.3	80.0-120	
Silver	20.0	18.9	94.5	80.0-120	
Zinc	100	97.4	97.4	80.0-120	

L1504169-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504169-01 06/21/22 00:09 • (MS) R3805291-5 06/21/22 00:17 • (MSD) R3805291-6 06/21/22 00:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	1190	1290	1220	103	26.5	1	75.0-125		V	6.12	20
Cadmium	100	0.331	109	105	109	104	1	75.0-125			4.50	20
Copper	100	18.7	126	121	107	103	1	75.0-125			3.66	20
Lead	100	9.23	117	112	108	103	1	75.0-125			4.20	20
Nickel	100	11.3	120	116	109	104	1	75.0-125			4.13	20
Selenium	100	U	105	101	105	101	1	75.0-125			4.42	20
Silver	20.0	U	21.3	20.4	106	102	1	75.0-125			4.21	20
Zinc	100	44.5	154	148	109	103	1	75.0-125			3.96	20

QUALITY CONTROL SUMMARY

L1504169-01

Method Blank (MB)

(MB) R3811065-1 07/05/22 14:30

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) R3811065-2 07/05/22 14:33 • (LCSD) R3811065-3 07/05/22 14:35

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	1.04	1.02	104	102	80.0-120			1.75	20

Method Blank (MB)

(MB) R3805314-1 06/20/22 22:58

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) R3805314-2 06/20/22 23:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.4	97.4	80.0-120	

L1504169-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504169-01 06/20/22 23:04 • (MS) R3805314-6 06/20/22 23:28 • (MSD) R3805314-5 06/20/22 23:18

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	3.12	105	98.6	102	95.5	5	75.0-125			6.72	20

Method Blank (MB)

(MB) R3804679-3 06/18/22 06:14

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)	*96.4*			*77.0-120*

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

(LCS) R3804679-1 06/18/22 04:44 • (LCSD) R3804679-2 06/18/22 05:05

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	6.29	5.63	114	102	72.0-127			11.1	20
(S) a,a,a-Trifluorotoluene(FID)				*113*	*111*	*77.0-120*				

L1504475-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504475-01 06/18/22 07:11 • (MS) R3804679-4 06/18/22 12:03 • (MSD) R3804679-5 06/18/22 12:23

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	138	U	163	157	118	114	25	10.0-151			3.75	28
(S) a,a,a-Trifluorotoluene(FID)					*113*	*112*		*77.0-120*				

Method Blank (MB)

(MB) R3804787-3 06/18/22 03:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*102*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.2*			*70.0-130*

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

(LCS) R3804787-1 06/18/22 02:03 • (LCSD) R3804787-2 06/18/22 02:23

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	0.130	0.136	104	109	70.0-123			4.51	20
Toluene	0.125	0.118	0.120	94.4	96.0	75.0-121			1.68	20
Ethylbenzene	0.125	0.128	0.128	102	102	74.0-126			0.000	20
Xylenes, Total	0.375	0.373	0.372	99.5	99.2	72.0-127			0.268	20
1,2,4-Trimethylbenzene	0.125	0.119	0.117	95.2	93.6	70.0-126			1.69	20
1,3,5-Trimethylbenzene	0.125	0.120	0.117	96.0	93.6	73.0-127			2.53	20
(S) Toluene-d8				*97.1*	*97.5*	*75.0-131*				
(S) 4-Bromofluorobenzene				*100*	*101*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*96.0*	*99.6*	*70.0-130*				

Method Blank (MB)

(MB) R3806540-1 06/23/22 09:36

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	*88.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3806540-2 06/23/22 09:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	47.5	95.0	50.0-150	
(S) o-Terphenyl			*106*	*18.0-148*	

L1504138-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504138-02 06/23/22 10:06 • (MS) R3806602-1 06/23/22 10:19 • (MSD) R3806602-2 06/23/22 10:31

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	48.9	6.07	32.4	33.7	53.8	56.5	1	50.0-150			3.93	20
(S) o-Terphenyl					*26.2*	*28.7*		*18.0-148*				

Method Blank (MB)

(MB) R3806628-2 06/23/22 06:59

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	*98.8*			*23.0-120*
(S) Nitrobenzene-d5	*52.4*			*14.0-149*
(S) 2-Fluorobiphenyl	*62.4*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3806628-1 06/23/22 06:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0412	51.5	50.0-120	
Anthracene	0.0800	0.0461	57.6	50.0-126	
Benzo(a)anthracene	0.0800	0.0500	62.5	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0500	62.5	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0500	62.5	49.0-125	
Benzo(a)pyrene	0.0800	0.0409	51.1	42.0-120	
Chrysene	0.0800	0.0505	63.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0542	67.8	47.0-125	
Fluoranthene	0.0800	0.0512	64.0	49.0-129	
Fluorene	0.0800	0.0449	56.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0532	66.5	46.0-125	
1-Methylnaphthalene	0.0800	0.0427	53.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0393	49.1	50.0-120	J4
Naphthalene	0.0800	0.0417	52.1	50.0-120	
Pyrene	0.0800	0.0475	59.4	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3806628-1 06/23/22 06:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*82.7*	*23.0-120*	
(S) Nitrobenzene-d5			*40.2*	*14.0-149*	
(S) 2-Fluorobiphenyl			*45.9*	*34.0-125*	

L1505123-26 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1505123-26 06/23/22 13:37 • (MS) R3806628-3 06/23/22 13:57 • (MSD) R3806628-4 06/23/22 14:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0776	U	0.0250	0.0270	32.2	34.6	1	14.0-127			7.69	27
Anthracene	0.0776	U	0.0356	0.0388	45.9	49.7	1	10.0-145			8.60	30
Benzo(a)anthracene	0.0776	U	0.0412	0.0453	53.1	58.1	1	10.0-139			9.48	30
Benzo(b)fluoranthene	0.0776	U	0.0366	0.0409	47.2	52.4	1	10.0-140			11.1	36
Benzo(k)fluoranthene	0.0776	U	0.0372	0.0428	47.9	54.9	1	10.0-137			14.0	31
Benzo(a)pyrene	0.0776	U	0.0354	0.0397	45.6	50.9	1	10.0-141			11.5	31
Chrysene	0.0776	U	0.0422	0.0484	54.4	62.1	1	10.0-145			13.7	30
Dibenz(a,h)anthracene	0.0776	U	0.0236	0.0261	30.4	33.5	1	10.0-132			10.1	31
Fluoranthene	0.0776	U	0.0398	0.0418	51.3	53.6	1	10.0-153			4.90	33
Fluorene	0.0776	U	0.0307	0.0316	39.6	40.5	1	11.0-130			2.89	29
Indeno(1,2,3-cd)pyrene	0.0776	U	0.0286	0.0309	36.9	39.6	1	10.0-137			7.73	32
1-Methylnaphthalene	0.0776	U	0.0262	0.0308	33.8	39.5	1	10.0-142			16.1	28
2-Methylnaphthalene	0.0776	U	0.0243	0.0276	31.3	35.4	1	10.0-137			12.7	28
Naphthalene	0.0776	U	0.0254	0.0305	32.7	39.1	1	10.0-135			18.2	27
Pyrene	0.0776	U	0.0386	0.0414	49.7	53.1	1	10.0-148			7.00	35
(S) p-Terphenyl-d14					*69.5*	*86.7*		*23.0-120*				
(S) Nitrobenzene-d5					*43.5*	*54.7*		*14.0-149*				
(S) 2-Fluorobiphenyl					*38.3*	*39.9*		*34.0-125*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper 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.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information: **SAME AS LEFT**

Pres Chk

Report to: **Blair Rollins**

Email To: **brollins@caerusoilandgas.com**

Project Description: RA11 Flowline Investigation

City/State Collected: **Piceance Crk, CO**

Please Circle: PT (MT) CT ET

Phone: **(970) 640-6919**

Client Project #

Lab Project # CAERUSPCO - KLEIN

Collected by (print): **Jordan Veith**

Site/Facility ID # RA11 Pad

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	COGCC Table 915-1	EC, pH, SAR	Arsenic, Boron	COGCC Table 910-1	Remarks	Sample # (lab only)
~~20220610-RA11~~ (JV)												
20220610-RA11-POR@5ft	Grab	SS	5ft	6/10/2022	9:45	2	X					-01

Jordan Veit
6/10/2022

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

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

SDG # 190469

H154

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 # 5433 8386 1060

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)
Jordan Veit	6/10/2022	12:15	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	6/10/22	1500	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No HCL / MeoH TBR

Temp: 1 °C 0.4 +0 =2.4 Bottles Received: 2

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Date: 6/11/22 Time: 0900

ANALYTICAL REPORT

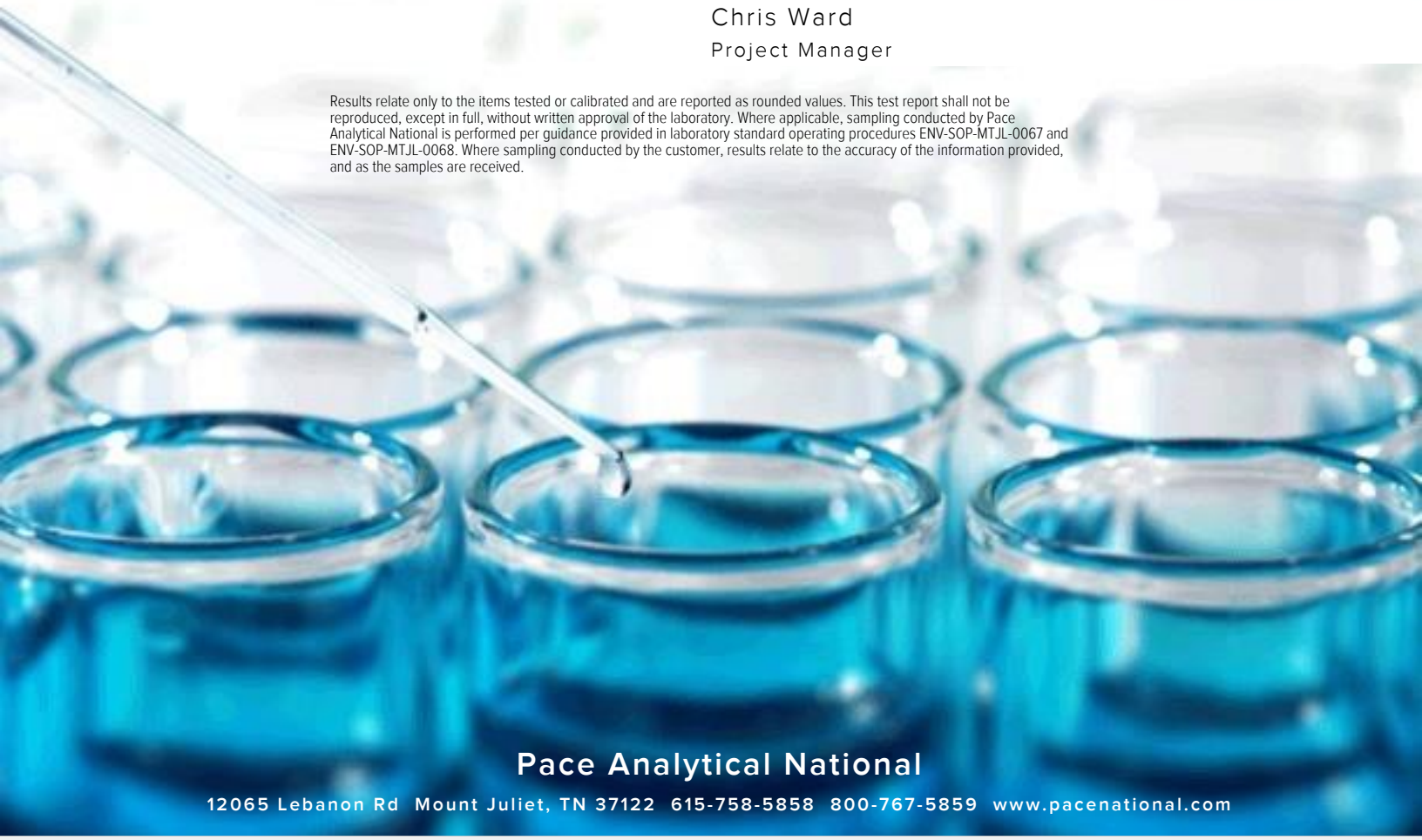
August 03, 2022

Caerus Oil and Gas

Sample Delivery Group:	L1512916
Samples Received:	07/08/2022
Project Number:	
Description:	RA11 Flowline Investigation
Site:	RA11 PAD
Report To:	Brett Middleton 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

20220707-RA11-POR @ 7FT L1512916-01 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 08:10 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:41	07/28/22 08:41	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 19:27	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893469	1	07/12/22 13:00	07/12/22 15:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 15:52	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 20:48	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 14:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1897547	1	07/20/22 11:20	07/20/22 12:39	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894735	1	07/08/22 16:36	07/13/22 21:18	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 11:03	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 22:05	AGW	Mt. Juliet, TN

20220707-RA11-PH01 @ 7FT L1512916-02 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 09:00 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:44	07/28/22 08:44	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 19:33	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893495	1	07/12/22 10:00	07/12/22 12:12	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 15:54	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	2	07/26/22 18:43	08/02/22 20:51	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 14:47	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1892819	1	07/08/22 16:36	07/11/22 16:44	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 19:20	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 13:34	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 22:23	AGW	Mt. Juliet, TN

20220707-RA11-PH02 @ 5FT L1512916-03 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 09:20 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:47	07/28/22 08:47	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 19:58	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893065	1	07/11/22 14:00	07/11/22 16:53	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 15:57	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 20:54	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 14:50	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1892819	1	07/08/22 16:36	07/11/22 17:07	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 19:39	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 11:17	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 22:40	AGW	Mt. Juliet, TN

20220707-RA11-PH03 @ 5FT L1512916-04 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 09:45 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:50	07/28/22 08:50	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:04	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893469	1	07/12/22 13:00	07/12/22 15:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:00	ZSA	Mt. Juliet, TN

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

20220707-RA11-PH03 @ 5FT L1512916-04 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 09:45 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 20:56	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:00	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1892819	1	07/08/22 16:36	07/11/22 17:30	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 19:58	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 12:53	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/15/22 03:08	AGW	Mt. Juliet, TN

20220707-RA11-PH05 @ 6FT L1512916-05 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 10:45 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:53	07/28/22 08:53	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:09	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1894176	1	07/13/22 09:00	07/13/22 11:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:02	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 20:59	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:03	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1892819	1	07/08/22 16:36	07/11/22 17:52	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 20:17	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 12:12	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 22:58	AGW	Mt. Juliet, TN

20220707-RA11-PH06 @ 6FT L1512916-06 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 11:10 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:56	07/28/22 08:56	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:14	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893469	1	07/12/22 13:00	07/12/22 15:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:10	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 21:02	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:07	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1892819	1	07/08/22 16:36	07/11/22 18:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 20:36	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1896745	1	07/08/22 16:36	07/18/22 14:05	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 11:31	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 23:16	AGW	Mt. Juliet, TN

20220707-RA11-PH07 @ 9FT L1512916-07 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 11:50 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 08:59	07/28/22 08:59	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:30	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893469	1	07/12/22 13:00	07/12/22 15:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:13	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 21:05	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:10	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1892819	1	07/08/22 16:36	07/11/22 18:38	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 20:55	DWR	Mt. Juliet, TN

20220707-RA11-PH07 @ 9FT L1512916-07 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 11:50 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 11:44	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 23:34	AGW	Mt. Juliet, TN

20220707-RA11-PH08 @ 5FT L1512916-08 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 12:10 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 09:02	07/28/22 09:02	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:35	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893469	1	07/12/22 13:00	07/12/22 15:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:15	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 21:13	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:13	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1893460	1	07/08/22 16:36	07/13/22 09:19	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 21:14	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1896745	1	07/08/22 16:36	07/18/22 13:46	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 11:58	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/14/22 23:52	AGW	Mt. Juliet, TN

20220707-RA11-PH09 @ 5FT L1512916-09 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 12:30 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 09:05	07/28/22 09:05	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:40	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1893495	1	07/12/22 10:00	07/12/22 12:12	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:18	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 21:15	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:17	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1893460	1	07/08/22 16:36	07/13/22 09:42	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 21:33	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 12:39	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/15/22 00:09	AGW	Mt. Juliet, TN

20220707-RA11-PH10 @ 5FT L1512916-10 Solid

Collected by: Jordan Veith | Collected date/time: 07/07/22 12:45 | Received date/time: 07/08/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1897275	1	07/28/22 09:15	07/28/22 09:15	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1899797	1	07/24/22 18:00	07/26/22 20:45	ERP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1894176	1	07/13/22 09:00	07/13/22 11:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1897843	1	07/21/22 03:31	07/21/22 07:51	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1897160	1	07/19/22 02:46	07/19/22 16:21	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1897256	1	07/26/22 18:43	08/02/22 21:18	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1897159	5	07/19/22 02:48	07/19/22 15:20	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1893460	1	07/08/22 16:36	07/13/22 11:14	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1894823	1	07/08/22 16:36	07/17/22 21:52	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1895195	1	07/15/22 08:54	07/16/22 12:26	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1894485	1	07/13/22 17:26	07/15/22 00:27	AGW	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	10.9		1	07/28/2022 08:41	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 19:27	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	9.00	T8	1	07/12/2022 15:00	WG1893469

Sample Narrative:
L1512916-01 WG1893469: 9 at 23.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	523		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:
L1512916-01 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	98.3		0.0852	0.500	1	07/19/2022 15:52	WG1897160
Cadmium	0.495	J	0.0471	0.500	1	07/19/2022 15:52	WG1897160
Copper	11.0		0.400	2.00	1	07/19/2022 15:52	WG1897160
Lead	9.66		0.208	0.500	1	07/19/2022 15:52	WG1897160
Nickel	15.9		0.132	2.00	1	07/19/2022 15:52	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 15:52	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 15:52	WG1897160
Zinc	54.3		0.832	5.00	1	07/19/2022 15:52	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.285		0.0167	0.200	1	08/02/2022 20:48	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.04		0.100	1.00	5	07/19/2022 14:43	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0531	J	0.0217	0.100	1	07/20/2022 12:39	WG1897547
(S) a,a,a-Trifluorotoluene(FID)	*98.7*			*77.0-120*		*07/20/2022 12:39*	WG1897547

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/13/2022 21:18	WG1894735
Toluene	0.00197	J	0.00130	0.00500	1	07/13/2022 21:18	WG1894735
Ethylbenzene	U		0.000737	0.00250	1	07/13/2022 21:18	WG1894735
Xylenes, Total	0.00175	J	0.000880	0.00650	1	07/13/2022 21:18	WG1894735
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/13/2022 21:18	WG1894735
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/13/2022 21:18	WG1894735
(S) Toluene-d8	*108*			*75.0-131*		*07/13/2022 21:18*	WG1894735
(S) 4-Bromofluorobenzene	*98.0*			*67.0-138*		*07/13/2022 21:18*	WG1894735
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*07/13/2022 21:18*	WG1894735

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	07/16/2022 11:03	WG1895195
C28-C36 Motor Oil Range	0.915	J	0.274	4.00	1	07/16/2022 11:03	WG1895195
(S) o-Terphenyl	*60.4*			*18.0-148*		*07/16/2022 11:03*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 22:05	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 22:05	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 22:05	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 22:05	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 22:05	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 22:05	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 22:05	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 22:05	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 22:05	WG1894485
Fluorene	U		0.00205	0.00600	1	07/14/2022 22:05	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 22:05	WG1894485
1-Methylnaphthalene	U		0.00449	0.0200	1	07/14/2022 22:05	WG1894485
2-Methylnaphthalene	U		0.00427	0.0200	1	07/14/2022 22:05	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/14/2022 22:05	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 22:05	WG1894485
(S) p-Terphenyl-d14	*79.7*			*23.0-120*		*07/14/2022 22:05*	WG1894485
(S) Nitrobenzene-d5	*73.7*			*14.0-149*		*07/14/2022 22:05*	WG1894485
(S) 2-Fluorobiphenyl	*67.0*			*34.0-125*		*07/14/2022 22:05*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	19.9		1	07/28/2022 08:44	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J6	0.255	1.00	1	07/26/2022 19:33	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	9.51	T8	1	07/12/2022 12:12	WG1893495

Sample Narrative:

L1512916-02 WG1893495: 9.51 at 24.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1000		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-02 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	1600		0.0852	0.500	1	07/19/2022 15:54	WG1897160
Cadmium	0.446	J	0.0471	0.500	1	07/19/2022 15:54	WG1897160
Copper	12.8		0.400	2.00	1	07/19/2022 15:54	WG1897160
Lead	10.4		0.208	0.500	1	07/19/2022 15:54	WG1897160
Nickel	13.9		0.132	2.00	1	07/19/2022 15:54	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 15:54	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 15:54	WG1897160
Zinc	47.2		0.832	5.00	1	07/19/2022 15:54	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.257	J	0.0334	0.400	2	08/02/2022 20:51	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.39		0.100	1.00	5	07/19/2022 14:47	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4.39		0.0217	0.100	1	07/11/2022 16:44	WG1892819
(S) a,a,a-Trifluorotoluene(FID)	*92.4*			*77.0-120*		*07/11/2022 16:44*	WG1892819

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000575	J	0.000467	0.00100	1	07/17/2022 19:20	WG1894823
Toluene	0.00143	J	0.00130	0.00500	1	07/17/2022 19:20	WG1894823
Ethylbenzene	0.00328		0.000737	0.00250	1	07/17/2022 19:20	WG1894823
Xylenes, Total	0.00403	J	0.000880	0.00650	1	07/17/2022 19:20	WG1894823
1,2,4-Trimethylbenzene	0.0107		0.00158	0.00500	1	07/17/2022 19:20	WG1894823
1,3,5-Trimethylbenzene	0.133		0.00200	0.00500	1	07/17/2022 19:20	WG1894823
(S) Toluene-d8	*106*			*75.0-131*		*07/17/2022 19:20*	WG1894823
(S) 4-Bromofluorobenzene	*106*			*67.0-138*		*07/17/2022 19:20*	WG1894823
(S) 1,2-Dichloroethane-d4	*95.6*			*70.0-130*		*07/17/2022 19:20*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	102		1.61	4.00	1	07/16/2022 13:34	WG1895195
C28-C36 Motor Oil Range	7.37		0.274	4.00	1	07/16/2022 13:34	WG1895195
(S) o-Terphenyl	*62.4*			*18.0-148*		*07/16/2022 13:34*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 22:23	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 22:23	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 22:23	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 22:23	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 22:23	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 22:23	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 22:23	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 22:23	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 22:23	WG1894485
Fluorene	0.00590	J	0.00205	0.00600	1	07/14/2022 22:23	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 22:23	WG1894485
1-Methylnaphthalene	0.0131	J	0.00449	0.0200	1	07/14/2022 22:23	WG1894485
2-Methylnaphthalene	0.0476		0.00427	0.0200	1	07/14/2022 22:23	WG1894485
Naphthalene	0.00867	J	0.00408	0.0200	1	07/14/2022 22:23	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 22:23	WG1894485
(S) p-Terphenyl-d14	*72.7*			*23.0-120*		*07/14/2022 22:23*	WG1894485
(S) Nitrobenzene-d5	*86.4*			*14.0-149*		*07/14/2022 22:23*	WG1894485
(S) 2-Fluorobiphenyl	*48.7*			*34.0-125*		*07/14/2022 22:23*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	17.3		1	07/28/2022 08:47	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 19:58	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	9.04	T8	1	07/11/2022 16:53	WG1893065

Sample Narrative:
L1512916-03 WG1893065: 9.04 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	779		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:
L1512916-03 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	84.1		0.0852	0.500	1	07/19/2022 15:57	WG1897160
Cadmium	0.617		0.0471	0.500	1	07/19/2022 15:57	WG1897160
Copper	9.52		0.400	2.00	1	07/19/2022 15:57	WG1897160
Lead	9.75		0.208	0.500	1	07/19/2022 15:57	WG1897160
Nickel	12.3		0.132	2.00	1	07/19/2022 15:57	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 15:57	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 15:57	WG1897160
Zinc	40.9		0.832	5.00	1	07/19/2022 15:57	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.251		0.0167	0.200	1	08/02/2022 20:54	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.75		0.100	1.00	5	07/19/2022 14:50	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4.55		0.0217	0.100	1	07/11/2022 17:07	WG1892819
(S) a,a,a-Trifluorotoluene(FID)	*90.7*			*77.0-120*		*07/11/2022 17:07*	WG1892819

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0111		0.000467	0.00100	1	07/17/2022 19:39	WG1894823
Toluene	0.0274		0.00130	0.00500	1	07/17/2022 19:39	WG1894823
Ethylbenzene	0.0145		0.000737	0.00250	1	07/17/2022 19:39	WG1894823
Xylenes, Total	0.203		0.000880	0.00650	1	07/17/2022 19:39	WG1894823
1,2,4-Trimethylbenzene	0.0373		0.00158	0.00500	1	07/17/2022 19:39	WG1894823
1,3,5-Trimethylbenzene	0.0383		0.00200	0.00500	1	07/17/2022 19:39	WG1894823
(S) Toluene-d8	*107*			*75.0-131*		*07/17/2022 19:39*	WG1894823
(S) 4-Bromofluorobenzene	*103*			*67.0-138*		*07/17/2022 19:39*	WG1894823
(S) 1,2-Dichloroethane-d4	*90.1*			*70.0-130*		*07/17/2022 19:39*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	3.18	J	1.61	4.00	1	07/16/2022 11:17	WG1895195
C28-C36 Motor Oil Range	0.553	J	0.274	4.00	1	07/16/2022 11:17	WG1895195
(S) o-Terphenyl	*75.2*			*18.0-148*		*07/16/2022 11:17*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 22:40	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 22:40	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 22:40	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 22:40	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 22:40	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 22:40	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 22:40	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 22:40	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 22:40	WG1894485
Fluorene	U		0.00205	0.00600	1	07/14/2022 22:40	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 22:40	WG1894485
1-Methylnaphthalene	U		0.00449	0.0200	1	07/14/2022 22:40	WG1894485
2-Methylnaphthalene	U		0.00427	0.0200	1	07/14/2022 22:40	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/14/2022 22:40	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 22:40	WG1894485
(S) p-Terphenyl-d14	*85.2*			*23.0-120*		*07/14/2022 22:40*	WG1894485
(S) Nitrobenzene-d5	*75.8*			*14.0-149*		*07/14/2022 22:40*	WG1894485
(S) 2-Fluorobiphenyl	*64.5*			*34.0-125*		*07/14/2022 22:40*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	21.0		1	07/28/2022 08:50	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.283	J	0.255	1.00	1	07/26/2022 20:04	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.62	T8	1	07/12/2022 15:00	WG1893469

Sample Narrative:

L1512916-04 WG1893469: 8.62 at 23.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1770		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-04 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	1730		0.0852	0.500	1	07/19/2022 16:00	WG1897160
Cadmium	0.454	J	0.0471	0.500	1	07/19/2022 16:00	WG1897160
Copper	14.5		0.400	2.00	1	07/19/2022 16:00	WG1897160
Lead	12.3		0.208	0.500	1	07/19/2022 16:00	WG1897160
Nickel	16.6		0.132	2.00	1	07/19/2022 16:00	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 16:00	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:00	WG1897160
Zinc	53.4		0.832	5.00	1	07/19/2022 16:00	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.261		0.0167	0.200	1	08/02/2022 20:56	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.79		0.100	1.00	5	07/19/2022 15:00	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	7.47		0.0217	0.100	1	07/11/2022 17:30	WG1892819
(S) a,a,a-Trifluorotoluene(FID)	*84.2*			*77.0-120*		*07/11/2022 17:30*	WG1892819

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00131		0.000467	0.00100	1	07/17/2022 19:58	WG1894823
Toluene	0.00265	J	0.00130	0.00500	1	07/17/2022 19:58	WG1894823
Ethylbenzene	0.0573		0.000737	0.00250	1	07/17/2022 19:58	WG1894823
Xylenes, Total	0.0321		0.000880	0.00650	1	07/17/2022 19:58	WG1894823
1,2,4-Trimethylbenzene	0.561		0.00158	0.00500	1	07/17/2022 19:58	WG1894823
1,3,5-Trimethylbenzene	1.63		0.00200	0.00500	1	07/17/2022 19:58	WG1894823
(S) Toluene-d8	*105*			*75.0-131*		*07/17/2022 19:58*	WG1894823
(S) 4-Bromofluorobenzene	*106*			*67.0-138*		*07/17/2022 19:58*	WG1894823
(S) 1,2-Dichloroethane-d4	*94.4*			*70.0-130*		*07/17/2022 19:58*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	106	J3 J5	1.61	4.00	1	07/16/2022 12:53	WG1895195
C28-C36 Motor Oil Range	7.92		0.274	4.00	1	07/16/2022 12:53	WG1895195
(S) o-Terphenyl	*58.0*			*18.0-148*		*07/16/2022 12:53*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0120		0.00209	0.00600	1	07/15/2022 03:08	WG1894485
Anthracene	U		0.00230	0.00600	1	07/15/2022 03:08	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/15/2022 03:08	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/15/2022 03:08	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/15/2022 03:08	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/15/2022 03:08	WG1894485
Chrysene	U		0.00232	0.00600	1	07/15/2022 03:08	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/15/2022 03:08	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/15/2022 03:08	WG1894485
Fluorene	0.0402		0.00205	0.00600	1	07/15/2022 03:08	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/15/2022 03:08	WG1894485
1-Methylnaphthalene	0.187		0.00449	0.0200	1	07/15/2022 03:08	WG1894485
2-Methylnaphthalene	0.392		0.00427	0.0200	1	07/15/2022 03:08	WG1894485
Naphthalene	0.110		0.00408	0.0200	1	07/15/2022 03:08	WG1894485
Pyrene	0.00552	J	0.00200	0.00600	1	07/15/2022 03:08	WG1894485
(S) p-Terphenyl-d14	*82.4*			*23.0-120*		*07/15/2022 03:08*	WG1894485
(S) Nitrobenzene-d5	*166*	J1		*14.0-149*		*07/15/2022 03:08*	WG1894485
(S) 2-Fluorobiphenyl	*59.2*			*34.0-125*		*07/15/2022 03:08*	WG1894485

Sample Narrative:

L1512916-04 WG1894485: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	13.9		1	07/28/2022 08:53	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 20:09	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.96	T8	1	07/13/2022 11:00	WG1894176

Sample Narrative:

L1512916-05 WG1894176: 8.96 at 24.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1050		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-05 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	307		0.0852	0.500	1	07/19/2022 16:02	WG1897160
Cadmium	0.517		0.0471	0.500	1	07/19/2022 16:02	WG1897160
Copper	13.3		0.400	2.00	1	07/19/2022 16:02	WG1897160
Lead	9.60		0.208	0.500	1	07/19/2022 16:02	WG1897160
Nickel	15.2		0.132	2.00	1	07/19/2022 16:02	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 16:02	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:02	WG1897160
Zinc	51.6		0.832	5.00	1	07/19/2022 16:02	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.157	J	0.0167	0.200	1	08/02/2022 20:59	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.86		0.100	1.00	5	07/19/2022 15:03	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	7.04		0.0217	0.100	1	07/11/2022 17:52	WG1892819
(S) a,a,a-Trifluorotoluene(FID)	*95.7*			*77.0-120*		*07/11/2022 17:52*	WG1892819

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2022 20:17	WG1894823
Toluene	U		0.00130	0.00500	1	07/17/2022 20:17	WG1894823
Ethylbenzene	0.0148		0.000737	0.00250	1	07/17/2022 20:17	WG1894823
Xylenes, Total	0.0577		0.000880	0.00650	1	07/17/2022 20:17	WG1894823
1,2,4-Trimethylbenzene	0.385		0.00158	0.00500	1	07/17/2022 20:17	WG1894823
1,3,5-Trimethylbenzene	0.0344		0.00200	0.00500	1	07/17/2022 20:17	WG1894823
(S) Toluene-d8	*107*			*75.0-131*		*07/17/2022 20:17*	WG1894823
(S) 4-Bromofluorobenzene	*107*			*67.0-138*		*07/17/2022 20:17*	WG1894823
(S) 1,2-Dichloroethane-d4	*90.5*			*70.0-130*		*07/17/2022 20:17*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	28.6		1.61	4.00	1	07/16/2022 12:12	WG1895195
C28-C36 Motor Oil Range	2.13	J	0.274	4.00	1	07/16/2022 12:12	WG1895195
(S) o-Terphenyl	*66.4*			*18.0-148*		*07/16/2022 12:12*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 22:58	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 22:58	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 22:58	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 22:58	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 22:58	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 22:58	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 22:58	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 22:58	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 22:58	WG1894485
Fluorene	0.00657		0.00205	0.00600	1	07/14/2022 22:58	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 22:58	WG1894485
1-Methylnaphthalene	0.00739	J	0.00449	0.0200	1	07/14/2022 22:58	WG1894485
2-Methylnaphthalene	0.0124	J	0.00427	0.0200	1	07/14/2022 22:58	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/14/2022 22:58	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 22:58	WG1894485
(S) p-Terphenyl-d14	*93.8*			*23.0-120*		*07/14/2022 22:58*	WG1894485
(S) Nitrobenzene-d5	*104*			*14.0-149*		*07/14/2022 22:58*	WG1894485
(S) 2-Fluorobiphenyl	*72.8*			*34.0-125*		*07/14/2022 22:58*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.17		1	07/28/2022 08:56	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 20:14	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	T8	1	07/12/2022 15:00	WG1893469

Sample Narrative:

L1512916-06 WG1893469: 8.22 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	296		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-06 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	134		0.0852	0.500	1	07/19/2022 16:10	WG1897160
Cadmium	0.406	J	0.0471	0.500	1	07/19/2022 16:10	WG1897160
Copper	12.0		0.400	2.00	1	07/19/2022 16:10	WG1897160
Lead	11.0		0.208	0.500	1	07/19/2022 16:10	WG1897160
Nickel	14.4		0.132	2.00	1	07/19/2022 16:10	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 16:10	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:10	WG1897160
Zinc	49.1		0.832	5.00	1	07/19/2022 16:10	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.261		0.0167	0.200	1	08/02/2022 21:02	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.63		0.100	1.00	5	07/19/2022 15:07	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0552	J	0.0217	0.100	1	07/11/2022 18:15	WG1892819
(S) a,a,a-Trifluorotoluene(FID)	*97.2*			*77.0-120*		*07/11/2022 18:15*	WG1892819

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2022 20:36	WG1894823
Toluene	U		0.00130	0.00500	1	07/17/2022 20:36	WG1894823
Ethylbenzene	U		0.000737	0.00250	1	07/17/2022 20:36	WG1894823
Xylenes, Total	0.00456	J	0.000880	0.00650	1	07/18/2022 14:05	WG1896745
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/18/2022 14:05	WG1896745
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2022 20:36	WG1894823
(S) Toluene-d8	*108*			*75.0-131*		*07/17/2022 20:36*	WG1894823
(S) Toluene-d8	*108*			*75.0-131*		*07/18/2022 14:05*	WG1896745
(S) 4-Bromofluorobenzene	*104*			*67.0-138*		*07/17/2022 20:36*	WG1894823
(S) 4-Bromofluorobenzene	*104*			*67.0-138*		*07/18/2022 14:05*	WG1896745
(S) 1,2-Dichloroethane-d4	*93.2*			*70.0-130*		*07/17/2022 20:36*	WG1894823
(S) 1,2-Dichloroethane-d4	*98.8*			*70.0-130*		*07/18/2022 14:05*	WG1896745

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	07/16/2022 11:31	WG1895195
C28-C36 Motor Oil Range	1.13	J	0.274	4.00	1	07/16/2022 11:31	WG1895195
(S) o-Terphenyl	*55.4*			*18.0-148*		*07/16/2022 11:31*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 23:16	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 23:16	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 23:16	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 23:16	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 23:16	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 23:16	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 23:16	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 23:16	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 23:16	WG1894485
Fluorene	U		0.00205	0.00600	1	07/14/2022 23:16	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 23:16	WG1894485
1-Methylnaphthalene	U		0.00449	0.0200	1	07/14/2022 23:16	WG1894485
2-Methylnaphthalene	U		0.00427	0.0200	1	07/14/2022 23:16	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/14/2022 23:16	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 23:16	WG1894485
(S) p-Terphenyl-d14	*87.0*			*23.0-120*		*07/14/2022 23:16*	WG1894485
(S) Nitrobenzene-d5	*72.0*			*14.0-149*		*07/14/2022 23:16*	WG1894485
(S) 2-Fluorobiphenyl	*59.5*			*34.0-125*		*07/14/2022 23:16*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.998		1	07/28/2022 08:59	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 20:30	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.31	T8	1	07/12/2022 15:00	WG1893469

Sample Narrative:

L1512916-07 WG1893469: 8.31 at 23.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	233		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-07 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	75.5		0.0852	0.500	1	07/19/2022 16:13	WG1897160
Cadmium	0.610		0.0471	0.500	1	07/19/2022 16:13	WG1897160
Copper	26.0		0.400	2.00	1	07/19/2022 16:13	WG1897160
Lead	22.3		0.208	0.500	1	07/19/2022 16:13	WG1897160
Nickel	14.9		0.132	2.00	1	07/19/2022 16:13	WG1897160
Selenium	6.26		0.764	2.00	1	07/19/2022 16:13	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:13	WG1897160
Zinc	71.8		0.832	5.00	1	07/19/2022 16:13	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.206		0.0167	0.200	1	08/02/2022 21:05	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	17.0		0.100	1.00	5	07/19/2022 15:10	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4.09		0.0217	0.100	1	07/11/2022 18:38	WG1892819
(S) a,a,a-Trifluorotoluene(FID)	*94.3*			*77.0-120*		*07/11/2022 18:38*	WG1892819

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0652		0.000467	0.00100	1	07/17/2022 20:55	WG1894823
Toluene	0.244		0.00130	0.00500	1	07/17/2022 20:55	WG1894823
Ethylbenzene	0.0266		0.000737	0.00250	1	07/17/2022 20:55	WG1894823
Xylenes, Total	0.551		0.000880	0.00650	1	07/17/2022 20:55	WG1894823
1,2,4-Trimethylbenzene	0.0798		0.00158	0.00500	1	07/17/2022 20:55	WG1894823
1,3,5-Trimethylbenzene	0.0779		0.00200	0.00500	1	07/17/2022 20:55	WG1894823
(S) Toluene-d8	*106*			*75.0-131*		*07/17/2022 20:55*	WG1894823
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*07/17/2022 20:55*	WG1894823
(S) 1,2-Dichloroethane-d4	*91.5*			*70.0-130*		*07/17/2022 20:55*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.54		1.61	4.00	1	07/16/2022 11:44	WG1895195
C28-C36 Motor Oil Range	0.285	J	0.274	4.00	1	07/16/2022 11:44	WG1895195
(S) o-Terphenyl	*63.2*			*18.0-148*		*07/16/2022 11:44*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 23:34	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 23:34	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 23:34	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 23:34	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 23:34	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 23:34	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 23:34	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 23:34	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 23:34	WG1894485
Fluorene	U		0.00205	0.00600	1	07/14/2022 23:34	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 23:34	WG1894485
1-Methylnaphthalene	0.00735	J	0.00449	0.0200	1	07/14/2022 23:34	WG1894485
2-Methylnaphthalene	0.0230		0.00427	0.0200	1	07/14/2022 23:34	WG1894485
Naphthalene	0.0100	J	0.00408	0.0200	1	07/14/2022 23:34	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 23:34	WG1894485
(S) p-Terphenyl-d14	*86.5*			*23.0-120*		*07/14/2022 23:34*	WG1894485
(S) Nitrobenzene-d5	*83.0*			*14.0-149*		*07/14/2022 23:34*	WG1894485
(S) 2-Fluorobiphenyl	*68.8*			*34.0-125*		*07/14/2022 23:34*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.579		1	07/28/2022 09:02	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 20:35	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.71	T8	1	07/12/2022 15:00	WG1893469

Sample Narrative:

L1512916-08 WG1893469: 8.71 at 23.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	322		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-08 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	127		0.0852	0.500	1	07/19/2022 16:15	WG1897160
Cadmium	0.403	J	0.0471	0.500	1	07/19/2022 16:15	WG1897160
Copper	12.4		0.400	2.00	1	07/19/2022 16:15	WG1897160
Lead	10.9		0.208	0.500	1	07/19/2022 16:15	WG1897160
Nickel	16.1		0.132	2.00	1	07/19/2022 16:15	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 16:15	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:15	WG1897160
Zinc	54.3		0.832	5.00	1	07/19/2022 16:15	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.292		0.0167	0.200	1	08/02/2022 21:13	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.97		0.100	1.00	5	07/19/2022 15:13	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0574	J	0.0217	0.100	1	07/13/2022 09:19	WG1893460
(S) a,a,a-Trifluorotoluene(FID)	*97.1*			*77.0-120*		*07/13/2022 09:19*	WG1893460

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/18/2022 13:46	WG1896745
Toluene	0.00222	J	0.00130	0.00500	1	07/18/2022 13:46	WG1896745
Ethylbenzene	U		0.000737	0.00250	1	07/17/2022 21:14	WG1894823
Xylenes, Total	0.00460	J	0.000880	0.00650	1	07/18/2022 13:46	WG1896745
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2022 21:14	WG1894823
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2022 21:14	WG1894823
(S) Toluene-d8	*107*			*75.0-131*		*07/17/2022 21:14*	WG1894823
(S) Toluene-d8	*105*			*75.0-131*		*07/18/2022 13:46*	WG1896745
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*07/17/2022 21:14*	WG1894823
(S) 4-Bromofluorobenzene	*106*			*67.0-138*		*07/18/2022 13:46*	WG1896745
(S) 1,2-Dichloroethane-d4	*89.0*			*70.0-130*		*07/17/2022 21:14*	WG1894823
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*07/18/2022 13:46*	WG1896745

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	07/16/2022 11:58	WG1895195
C28-C36 Motor Oil Range	1.11	J	0.274	4.00	1	07/16/2022 11:58	WG1895195
(S) o-Terphenyl	*69.1*			*18.0-148*		*07/16/2022 11:58*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/14/2022 23:52	WG1894485
Anthracene	U		0.00230	0.00600	1	07/14/2022 23:52	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/14/2022 23:52	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/14/2022 23:52	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/14/2022 23:52	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/14/2022 23:52	WG1894485
Chrysene	U		0.00232	0.00600	1	07/14/2022 23:52	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/14/2022 23:52	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/14/2022 23:52	WG1894485
Fluorene	U		0.00205	0.00600	1	07/14/2022 23:52	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/14/2022 23:52	WG1894485
1-Methylnaphthalene	U		0.00449	0.0200	1	07/14/2022 23:52	WG1894485
2-Methylnaphthalene	U		0.00427	0.0200	1	07/14/2022 23:52	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/14/2022 23:52	WG1894485
Pyrene	U		0.00200	0.00600	1	07/14/2022 23:52	WG1894485
(S) p-Terphenyl-d14	*79.8*			*23.0-120*		*07/14/2022 23:52*	WG1894485
(S) Nitrobenzene-d5	*69.6*			*14.0-149*		*07/14/2022 23:52*	WG1894485
(S) 2-Fluorobiphenyl	*60.7*			*34.0-125*		*07/14/2022 23:52*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.631		1	07/28/2022 09:05	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.309	J	0.255	1.00	1	07/26/2022 20:40	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.34	T8	1	07/12/2022 12:12	WG1893495

Sample Narrative:

L1512916-09 WG1893495: 8.34 at 24.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	206		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-09 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	185		0.0852	0.500	1	07/19/2022 16:18	WG1897160
Cadmium	0.367	J	0.0471	0.500	1	07/19/2022 16:18	WG1897160
Copper	13.0		0.400	2.00	1	07/19/2022 16:18	WG1897160
Lead	11.1		0.208	0.500	1	07/19/2022 16:18	WG1897160
Nickel	15.3		0.132	2.00	1	07/19/2022 16:18	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 16:18	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:18	WG1897160
Zinc	53.9		0.832	5.00	1	07/19/2022 16:18	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.271		0.0167	0.200	1	08/02/2022 21:15	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.65		0.100	1.00	5	07/19/2022 15:17	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0312	J	0.0217	0.100	1	07/13/2022 09:42	WG1893460
(S) a,a,a-Trifluorotoluene(FID)	*96.6*			*77.0-120*		*07/13/2022 09:42*	WG1893460

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2022 21:33	WG1894823
Toluene	U		0.00130	0.00500	1	07/17/2022 21:33	WG1894823
Ethylbenzene	U		0.000737	0.00250	1	07/17/2022 21:33	WG1894823
Xylenes, Total	U		0.000880	0.00650	1	07/17/2022 21:33	WG1894823
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2022 21:33	WG1894823
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2022 21:33	WG1894823
(S) Toluene-d8	*108*			*75.0-131*		*07/17/2022 21:33*	WG1894823
(S) 4-Bromofluorobenzene	*103*			*67.0-138*		*07/17/2022 21:33*	WG1894823
(S) 1,2-Dichloroethane-d4	*93.6*			*70.0-130*		*07/17/2022 21:33*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	07/16/2022 12:39	WG1895195
C28-C36 Motor Oil Range	1.76	J	0.274	4.00	1	07/16/2022 12:39	WG1895195
(S) o-Terphenyl	*59.6*			*18.0-148*		*07/16/2022 12:39*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/15/2022 00:09	WG1894485
Anthracene	U		0.00230	0.00600	1	07/15/2022 00:09	WG1894485
Benzo(a)anthracene	U		0.00173	0.00600	1	07/15/2022 00:09	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/15/2022 00:09	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/15/2022 00:09	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/15/2022 00:09	WG1894485
Chrysene	U		0.00232	0.00600	1	07/15/2022 00:09	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/15/2022 00:09	WG1894485
Fluoranthene	U		0.00227	0.00600	1	07/15/2022 00:09	WG1894485
Fluorene	U		0.00205	0.00600	1	07/15/2022 00:09	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/15/2022 00:09	WG1894485
1-Methylnaphthalene	U		0.00449	0.0200	1	07/15/2022 00:09	WG1894485
2-Methylnaphthalene	U		0.00427	0.0200	1	07/15/2022 00:09	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/15/2022 00:09	WG1894485
Pyrene	U		0.00200	0.00600	1	07/15/2022 00:09	WG1894485
(S) p-Terphenyl-d14	*99.6*			*23.0-120*		*07/15/2022 00:09*	WG1894485
(S) Nitrobenzene-d5	*87.4*			*14.0-149*		*07/15/2022 00:09*	WG1894485
(S) 2-Fluorobiphenyl	*80.3*			*34.0-125*		*07/15/2022 00:09*	WG1894485

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	1.19		1	07/28/2022 09:15	WG1897275

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2022 20:45	WG1899797

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.56	T8	1	07/13/2022 11:00	WG1894176

Sample Narrative:

L1512916-10 WG1894176: 8.56 at 24.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	234		10.0	1	07/21/2022 07:51	WG1897843

Sample Narrative:

L1512916-10 WG1897843: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	160		0.0852	0.500	1	07/19/2022 16:21	WG1897160
Cadmium	0.552		0.0471	0.500	1	07/19/2022 16:21	WG1897160
Copper	11.8		0.400	2.00	1	07/19/2022 16:21	WG1897160
Lead	9.09		0.208	0.500	1	07/19/2022 16:21	WG1897160
Nickel	14.1		0.132	2.00	1	07/19/2022 16:21	WG1897160
Selenium	U		0.764	2.00	1	07/19/2022 16:21	WG1897160
Silver	U		0.127	1.00	1	07/19/2022 16:21	WG1897160
Zinc	47.6		0.832	5.00	1	07/19/2022 16:21	WG1897160

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.277		0.0167	0.200	1	08/02/2022 21:18	WG1897256

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.09		0.100	1.00	5	07/19/2022 15:20	WG1897159

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0560	J	0.0217	0.100	1	07/13/2022 11:14	WG1893460
(S) a,a,a-Trifluorotoluene(FID)	*96.8*			*77.0-120*		*07/13/2022 11:14*	WG1893460

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2022 21:52	WG1894823
Toluene	U		0.00130	0.00500	1	07/17/2022 21:52	WG1894823
Ethylbenzene	U		0.000737	0.00250	1	07/17/2022 21:52	WG1894823
Xylenes, Total	0.00320	J	0.000880	0.00650	1	07/17/2022 21:52	WG1894823
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2022 21:52	WG1894823
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2022 21:52	WG1894823
(S) Toluene-d8	*108*			*75.0-131*		*07/17/2022 21:52*	WG1894823
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*07/17/2022 21:52*	WG1894823
(S) 1,2-Dichloroethane-d4	*94.9*			*70.0-130*		*07/17/2022 21:52*	WG1894823

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	07/16/2022 12:26	WG1895195
C28-C36 Motor Oil Range	1.62	J	0.274	4.00	1	07/16/2022 12:26	WG1895195
(S) o-Terphenyl	*80.9*			*18.0-148*		*07/16/2022 12:26*	WG1895195

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/15/2022 00:27	WG1894485
Anthracene	0.00281	J	0.00230	0.00600	1	07/15/2022 00:27	WG1894485
Benzo(a)anthracene	0.00204	J	0.00173	0.00600	1	07/15/2022 00:27	WG1894485
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/15/2022 00:27	WG1894485
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/15/2022 00:27	WG1894485
Benzo(a)pyrene	U		0.00179	0.00600	1	07/15/2022 00:27	WG1894485
Chrysene	U		0.00232	0.00600	1	07/15/2022 00:27	WG1894485
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/15/2022 00:27	WG1894485
Fluoranthene	0.00892		0.00227	0.00600	1	07/15/2022 00:27	WG1894485
Fluorene	U		0.00205	0.00600	1	07/15/2022 00:27	WG1894485
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/15/2022 00:27	WG1894485
1-Methylnaphthalene	U		0.00449	0.0200	1	07/15/2022 00:27	WG1894485
2-Methylnaphthalene	U		0.00427	0.0200	1	07/15/2022 00:27	WG1894485
Naphthalene	U		0.00408	0.0200	1	07/15/2022 00:27	WG1894485
Pyrene	0.00609		0.00200	0.00600	1	07/15/2022 00:27	WG1894485
(S) p-Terphenyl-d14	*105*			*23.0-120*		*07/15/2022 00:27*	WG1894485
(S) Nitrobenzene-d5	*85.8*			*14.0-149*		*07/15/2022 00:27*	WG1894485
(S) 2-Fluorobiphenyl	*83.2*			*34.0-125*		*07/15/2022 00:27*	WG1894485

QUALITY CONTROL SUMMARY

L1512916-01,02,03,04,05,06,07,08,09,10

Method Blank (MB)

(MB) R3819636-1 07/26/22 18:25

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

L1512429-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1512429-01 07/26/22 18:56 • (DUP) R3819636-3 07/26/22 19:01

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

L1512921-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512921-03 07/26/22 21:01 • (DUP) R3819636-8 07/26/22 21:06

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.599	0.552	1	8.20	J	20

Laboratory Control Sample (LCS)

(LCS) R3819636-2 07/26/22 18:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.0	100	80.0-120	

L1512916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1512916-02 07/26/22 19:33 • (MS) R3819636-5 07/26/22 19:43 • (MSD) R3819636-6 07/26/22 19:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	15.1	14.9	75.5	74.7	1	75.0-125		J6	1.07	20

L1512916-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1512916-02 07/26/22 19:33 • (MS) R3819636-7 07/26/22 19:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	672	U	631	93.9	50	75.0-125	

L1512921-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512921-03 07/11/22 16:53 • (DUP) R3813340-2 07/11/22 16:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.23	8.25	1	0.243		1

Sample Narrative:

OS: 8.23 at 23C

DUP: 8.25 at 23.2C

L1513243-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1513243-05 07/11/22 16:53 • (DUP) R3813340-3 07/11/22 16:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.09	8.13	1	0.493		1

Sample Narrative:

OS: 8.09 at 22.9C

DUP: 8.13 at 23C

Laboratory Control Sample (LCS)

(LCS) R3813340-1 07/11/22 16:53

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

Sample Narrative:

LCS: 9.9 at 23.2C

L1511319-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1511319-02 07/12/22 15:00 • (DUP) R3813760-2 07/12/22 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.99	7.98	1	0.125		1

Sample Narrative:

OS: 7.99 at 24.1C

DUP: 7.98 at 24.2C

L1511718-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511718-01 07/12/22 15:00 • (DUP) R3813760-3 07/12/22 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.11	8.12	1	0.123		1

Sample Narrative:

OS: 8.11 at 24.1C

DUP: 8.12 at 23.6C

Laboratory Control Sample (LCS)

(LCS) R3813760-1 07/12/22 15:00

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

Sample Narrative:

LCS: 9.9 at 23.6C

L1512950-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512950-03 07/12/22 12:12 • (DUP) R3813609-2 07/12/22 12:12

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

Sample Narrative:

OS: 8.11 at 23.8C

DUP: 8.13 at 24C

Laboratory Control Sample (LCS)

(LCS) R3813609-1 07/12/22 12:12

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

Sample Narrative:

LCS: 9.91 at 24C

L1512916-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1512916-05 07/13/22 11:00 • (DUP) R3814187-2 07/13/22 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.96	8.93	1	0.335		1

Sample Narrative:

OS: 8.96 at 24.4C

DUP: 8.93 at 24.4C

L1512916-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1512916-10 07/13/22 11:00 • (DUP) R3814187-3 07/13/22 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.56	8.54	1	0.234		1

Sample Narrative:

OS: 8.56 at 24.6C

DUP: 8.54 at 25C

Laboratory Control Sample (LCS)

(LCS) R3814187-1 07/13/22 11:00

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

Sample Narrative:

LCS: 9.92 at 23.1C

Method Blank (MB)

(MB) R3817496-1 07/21/22 07:51

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

L1512916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1512916-01 07/21/22 07:51 • (DUP) R3817496-3 07/21/22 07:51

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	523	563	1	7.37		20

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

L1512920-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512920-03 07/21/22 07:51 • (DUP) R3817496-4 07/21/22 07:51

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	390	435	1	10.9		20

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

Laboratory Control Sample (LCS)

(LCS) R3817496-2 07/21/22 07:51

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	286	282	98.6	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3816832-1 07/19/22 15:06

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

Laboratory Control Sample (LCS)

(LCS) R3816832-2 07/19/22 15:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	100	100	80.0-120	
Cadmium	100	96.4	96.4	80.0-120	
Copper	100	97.5	97.5	80.0-120	
Lead	100	96.1	96.1	80.0-120	
Nickel	100	96.6	96.6	80.0-120	
Selenium	100	97.2	97.2	80.0-120	
Silver	20.0	18.5	92.6	80.0-120	
Zinc	100	94.8	94.8	80.0-120	

L1511319-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1511319-01 07/19/22 15:12 • (MS) R3816832-5 07/19/22 15:19 • (MSD) R3816832-6 07/19/22 15:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	129	217	218	87.2	88.8	1	75.0-125			0.759	20
Cadmium	100	0.250	85.5	85.7	85.3	85.4	1	75.0-125			0.187	20
Copper	100	12.9	101	101	88.1	88.6	1	75.0-125			0.460	20
Lead	100	9.45	93.7	94.1	84.3	84.6	1	75.0-125			0.363	20
Nickel	100	12.9	98.7	99.2	85.9	86.3	1	75.0-125			0.410	20
Selenium	100	U	84.8	84.5	84.8	84.5	1	75.0-125			0.301	20
Silver	20.0	U	16.3	16.5	81.6	82.4	1	75.0-125			0.940	20
Zinc	100	41.7	123	123	80.8	81.5	1	75.0-125			0.519	20

Method Blank (MB)

(MB) R3821919-1 08/02/22 20:40

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) R3821919-2 08/02/22 20:43 • (LCSD) R3821919-3 08/02/22 20:45

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	1.08	1.07	108	107	80.0-120			0.672	20

Method Blank (MB)

(MB) R3816703-1 07/19/22 13:40

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) R3816703-2 07/19/22 13:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.0	97.0	80.0-120	

L1511319-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1511319-01 07/19/22 13:47 • (MS) R3816703-5 07/19/22 13:57 • (MSD) R3816703-6 07/19/22 14:00

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	3.63	85.9	90.0	82.3	86.3	5	75.0-125			4.60	20

Method Blank (MB)

(MB) R3816029-2 07/11/22 08:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*96.4*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3816029-1 07/11/22 06:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	3.98	72.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*96.3*	*77.0-120*	

Method Blank (MB)

(MB) R3814907-2 07/13/22 06:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*97.2*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3814907-1 07/13/22 05:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.23	95.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*77.0-120*	

Method Blank (MB)

(MB) R3817216-2 07/20/22 04:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*99.1*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3817216-1 07/20/22 03:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.54	82.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*100*	*77.0-120*	

Method Blank (MB)

(MB) R3814940-2 07/13/22 19:05

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	*102*			*75.0-131*
(S) 4-Bromofluorobenzene	*94.1*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3814940-1 07/13/22 18:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.109	87.2	70.0-123	
Toluene	0.125	0.104	83.2	75.0-121	
Ethylbenzene	0.125	0.105	84.0	74.0-126	
Xylenes, Total	0.375	0.311	82.9	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.0996	79.7	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.107	85.6	73.0-127	
(S) Toluene-d8			*100*	*75.0-131*	
(S) 4-Bromofluorobenzene			*98.3*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*107*	*70.0-130*	

Method Blank (MB)

(MB) R3815968-2 07/17/22 13:45

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	*108*			*75.0-131*
(S) 4-Bromofluorobenzene	*98.3*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.2*			*70.0-130*

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

(LCS) R3815968-1 07/17/22 12:09 • (LCSD) R3815968-3 07/17/22 15:05

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	0.131	102	105	70.0-123			2.32	20
Toluene	0.125	0.141	0.136	113	109	75.0-121			3.61	20
Ethylbenzene	0.125	0.135	0.135	108	108	74.0-126			0.000	20
Xylenes, Total	0.375	0.423	0.426	113	114	72.0-127			0.707	20
1,2,4-Trimethylbenzene	0.125	0.137	0.135	110	108	70.0-126			1.47	20
1,3,5-Trimethylbenzene	0.125	0.132	0.129	106	103	73.0-127			2.30	20
(S) Toluene-d8				*108*	*103*	*75.0-131*				
(S) 4-Bromofluorobenzene				*103*	*107*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*101*	*102*	*70.0-130*				

Method Blank (MB)

(MB) R3816666-3 07/18/22 13:14

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
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
(S) Toluene-d8	*107*			*75.0-131*
(S) 4-Bromofluorobenzene	*111*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*

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

(LCS) R3816666-1 07/18/22 12:18 • (LCSD) R3816666-2 07/18/22 12:37

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	0.115	0.114	92.0	91.2	70.0-123			0.873	20
Toluene	0.125	0.119	0.123	95.2	98.4	75.0-121			3.31	20
Xylenes, Total	0.375	0.383	0.401	102	107	72.0-127			4.59	20
1,2,4-Trimethylbenzene	0.125	0.122	0.124	97.6	99.2	70.0-126			1.63	20
(S) Toluene-d8				*106*	*107*	*75.0-131*				
(S) 4-Bromofluorobenzene				*103*	*106*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*105*	*102*	*70.0-130*				

Method Blank (MB)

(MB) R3815699-1 07/16/22 06:03

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	*62.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3815699-2 07/16/22 06:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.6	65.2	50.0-150	
(S) o-Terphenyl			*79.4*	*18.0-148*	

L1512916-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1512916-04 07/16/22 12:53 • (MS) R3815703-1 07/16/22 13:07 • (MSD) R3815703-2 07/16/22 13:20

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	106	142	221	72.0	230	1	50.0-150		J3 J5	43.5	20
(S) o-Terphenyl					*59.2*	*73.0*		*18.0-148*				

Method Blank (MB)

(MB) R3815373-2 07/14/22 20:36

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	*120*			*23.0-120*
(S) Nitrobenzene-d5	*81.8*			*14.0-149*
(S) 2-Fluorobiphenyl	*88.6*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3815373-1 07/14/22 20:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0678	84.8	50.0-120	
Anthracene	0.0800	0.0623	77.9	50.0-126	
Benzo(a)anthracene	0.0800	0.0641	80.1	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0749	93.6	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0731	91.4	49.0-125	
Benzo(a)pyrene	0.0800	0.0589	73.6	42.0-120	
Chrysene	0.0800	0.0704	88.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0763	95.4	47.0-125	
Fluoranthene	0.0800	0.0677	84.6	49.0-129	
Fluorene	0.0800	0.0692	86.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0724	90.5	46.0-125	
1-Methylnaphthalene	0.0800	0.0690	86.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0648	81.0	50.0-120	
Naphthalene	0.0800	0.0700	87.5	50.0-120	
Pyrene	0.0800	0.0707	88.4	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3815373-1 07/14/22 20:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*119*	*23.0-120*	
(S) Nitrobenzene-d5			*91.4*	*14.0-149*	
(S) 2-Fluorobiphenyl			*93.9*	*34.0-125*	

L1512921-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1512921-05 07/15/22 01:38 • (MS) R3815373-3 07/15/22 01:56 • (MSD) R3815373-4 07/15/22 02:14

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 %
Acenaphthene	0.0788	U	0.0560	0.0523	71.1	66.4	1	14.0-127			6.83	27
Anthracene	0.0788	U	0.0565	0.0505	71.7	64.1	1	10.0-145			11.2	30
Benzo(a)anthracene	0.0788	U	0.0576	0.0527	73.1	66.9	1	10.0-139			8.88	30
Benzo(b)fluoranthene	0.0788	U	0.0537	0.0499	68.1	63.3	1	10.0-140			7.34	36
Benzo(k)fluoranthene	0.0788	U	0.0555	0.0501	70.4	63.6	1	10.0-137			10.2	31
Benzo(a)pyrene	0.0788	U	0.0574	0.0529	72.8	67.1	1	10.0-141			8.16	31
Chrysene	0.0788	U	0.0574	0.0530	72.8	67.3	1	10.0-145			7.97	30
Dibenz(a,h)anthracene	0.0788	U	0.0552	0.0508	70.1	64.5	1	10.0-132			8.30	31
Fluoranthene	0.0788	U	0.0596	0.0542	75.6	68.8	1	10.0-153			9.49	33
Fluorene	0.0788	U	0.0572	0.0528	72.6	67.0	1	11.0-130			8.00	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0560	0.0510	71.1	64.7	1	10.0-137			9.35	32
1-Methylnaphthalene	0.0788	U	0.0595	0.0554	75.5	70.3	1	10.0-142			7.14	28
2-Methylnaphthalene	0.0788	U	0.0584	0.0534	74.1	67.8	1	10.0-137			8.94	28
Naphthalene	0.0788	U	0.0580	0.0539	73.6	68.4	1	10.0-135			7.33	27
Pyrene	0.0788	U	0.0574	0.0522	72.8	66.2	1	10.0-148			9.49	35
(S) p-Terphenyl-d14					*89.4*	*89.0*		*23.0-120*				
(S) Nitrobenzene-d5					*82.1*	*70.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*73.6*	*73.1*		*34.0-125*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
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.

Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information: **SAME AS LEFT**

Pres Chk

Report to: **Jake Janicek**

Email To: **jjanicek@caerusoilandgas.com**

Project Description: RAII Flowline Investigation

City/State Collected: **Piceance Crk, CO**

Please Circle: PT MT CT ET

Phone: **(970) 778-2314**

Client Project #

Lab Project # CAERUSPCO_KLEIN

Collected by (print): **Jordan Veith**

Site/Facility ID # RAII Pad

P.O. # 4

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

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

SDG # L1512916 B159

Acctnum:
Template:
Prelogin:
PM:
PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	COGCC Table 915-1	EC, pH, SAR	Arsenic, Boron	COGCC Table 910-1	Remarks	Sample # (lab only)
20220707_RAII_PH01@7ft	Grab	SS	7'	7/7/22	8:10	2	X					-01
20220707_RAII_PH01@7ft	Grab	SS	7'	7/7/22	9:00	2	X					-02
20220707-RAII-PH02@5ft	Grab	SS	5'	7/7/22	9:20	2	X					-03
20220707_RAII_PH03@5ft	Grab	SS	5'	7/7/22	9:45	2	X					-04
20220707-RAII-PH05@6ft	Grab	SS	6'	7/7/22	10:45	2	X					-05
20220707_RAII_PH06@6ft	Grab	SS	6'	7/7/22	11:10	2	X					-06
20220707_RAII_PH07@9ft	Grab	SS	9'	7/7/22	11:50	2	X					-07
20220707_RAII_PH08@5ft	Grab	SS	5'	7/7/22	12:10	2	X					-08
20220707_RAII_PH09@5ft	Grab	SS	5'	7/7/22	12:30	2	X					-09
20220707_RAII_PH10@5ft	Grab	SS	5'	7/7/22	12:45	2	X					-10

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

Remarks:

(20)

pH _____ Temp _____

Flow _____ Other _____

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

Tracking # 5755 8084 8355

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	
	7/7/22	17:00			
Relinquished by : (Signature)	Date: 7/7/22	Time: 1730	Received by: (Signature)	Temp: °C Bottles Received: DRA7 4.7+0=4.7 28	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 7/8 Time: 0845	Hold: Condition: NCF / OK

ANALYTICAL REPORT

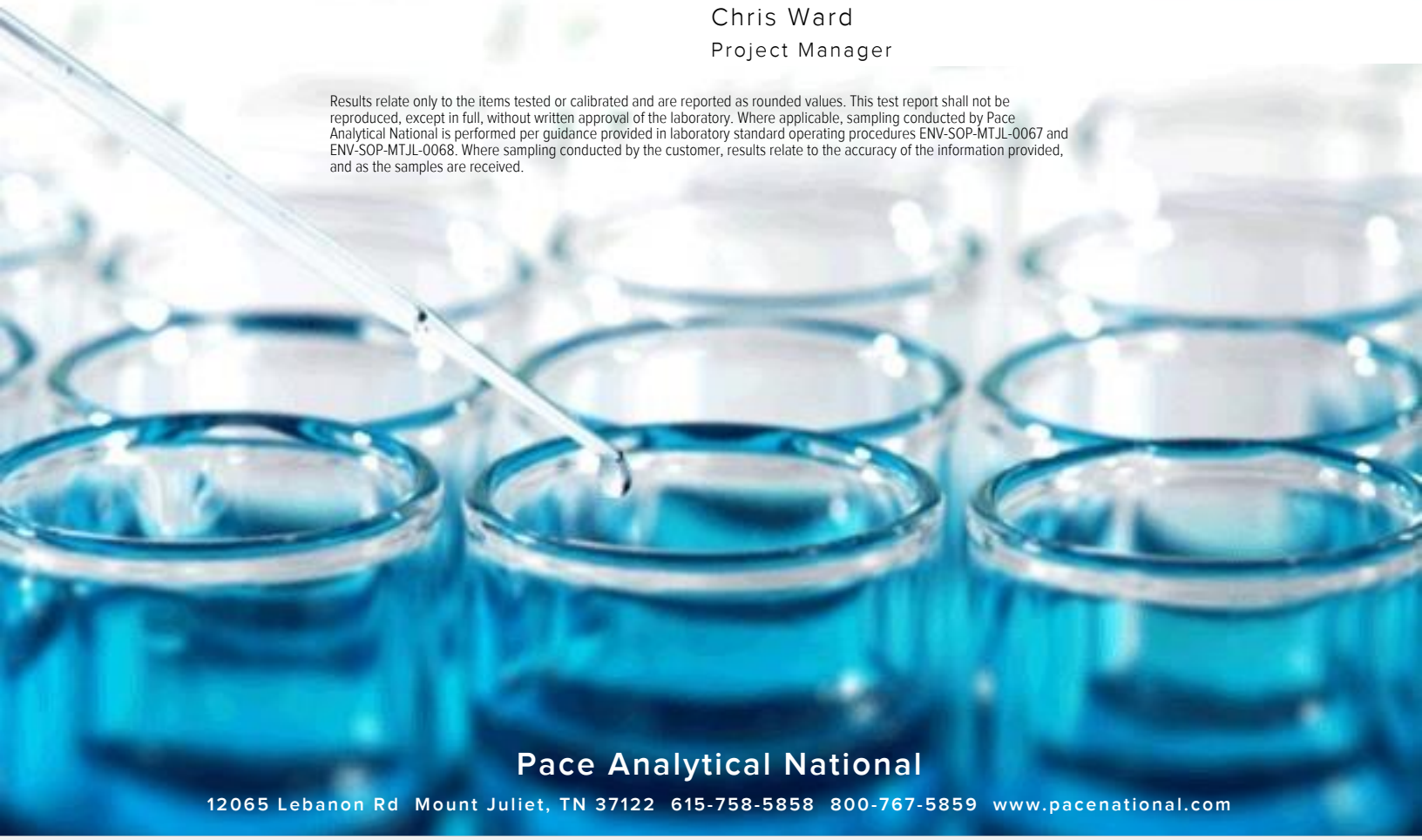
June 29, 2022

Caerus Oil and Gas

Sample Delivery Group:	L1504170
Samples Received:	06/11/2022
Project Number:	
Description:	RA11 Flowline Investigation
Site:	RA11 PAD
Report To:	Brett Middleton 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

20220610_RA11_BG01@1FT L1504170-01 Solid

Collected by: Jordan Veith
Collected date/time: 06/10/22 10:45
Received date/time: 06/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1883524	1	06/27/22 00:58	06/27/22 00:58	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1879901	1	06/16/22 08:00	06/17/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880054	1	06/15/22 16:06	06/18/22 10:33	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883067	5	06/28/22 16:44	06/28/22 21:33	LD	Mt. Juliet, TN

20220610_RA11_BG02@1FT L1504170-02 Solid

Collected by: Jordan Veith
Collected date/time: 06/10/22 11:10
Received date/time: 06/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1883524	1	06/27/22 01:00	06/27/22 01:00	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1879954	1	06/16/22 12:00	06/16/22 14:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880273	1	06/19/22 07:57	06/20/22 11:10	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883067	5	06/28/22 16:44	06/28/22 21:37	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	3.47		1	06/27/2022 00:58	WG1883524

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	8.15	T8	1	06/17/2022 10:00	WG1879901

Sample Narrative:

L1504170-01 WG1879901: 8.15 at 24C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	524		10.0	1	06/18/2022 10:33	WG1880054

Sample Narrative:

L1504170-01 WG1880054: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	10.6		0.100	1.00	5	06/28/2022 21:33	WG1883067

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0310		1	06/27/2022 01:00	WG1883524

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.89	T8	1	06/16/2022 14:00	WG1879954

Sample Narrative:

L1504170-02 WG1879954: 6.89 at 24.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	38.6		10.0	1	06/20/2022 11:10	WG1880273

Sample Narrative:

L1504170-02 WG1880273: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	4.88		0.100	1.00	5	06/28/2022 21:37	WG1883067

L1503728-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1503728-03 06/17/22 10:00 • (DUP) R3804235-2 06/17/22 10:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.04	8.01	1	0.374		1

Sample Narrative:

OS: 8.04 at 23.81C

DUP: 8.01 at 24.2C

L1504170-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504170-01 06/17/22 10:00 • (DUP) R3804235-3 06/17/22 10:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.15	8.17	1	0.245		1

Sample Narrative:

OS: 8.15 at 24C

DUP: 8.17 at 24.1C

Laboratory Control Sample (LCS)

(LCS) R3804235-1 06/17/22 10:00

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

Sample Narrative:

LCS: 9.9 at 24C

L1504172-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504172-01 06/16/22 14:00 • (DUP) R3803975-2 06/16/22 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	7.91	7.91	1	0.000		1

Sample Narrative:

OS: 7.91 at 24.5C

DUP: 7.91 at 24.6C

L1504176-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504176-01 06/16/22 14:00 • (DUP) R3803975-3 06/16/22 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.02	8.01	1	0.125		1

Sample Narrative:

OS: 8.02 at 25C

DUP: 8.01 at 25C

Laboratory Control Sample (LCS)

(LCS) R3803975-1 06/16/22 14:00

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

Sample Narrative:

LCS: 9.92 at 24.3C

Method Blank (MB)

(MB) R3804589-1 06/18/22 10:33

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

L1503722-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1503722-01 06/18/22 10:33 • (DUP) R3804589-3 06/18/22 10:33

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	116	124	1	6.93		20

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

L1503725-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1503725-02 06/18/22 10:33 • (DUP) R3804589-4 06/18/22 10:33

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	85.7	99.9	1	15.3		20

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

Laboratory Control Sample (LCS)

(LCS) R3804589-2 06/18/22 10:33

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	287	107	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3804957-1 06/20/22 11:10

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

Sample Narrative:
BLANK: at 25C

L1502452-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1502452-02 06/20/22 11:10 • (DUP) R3804957-3 06/20/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1980	1980	1	0.000		20

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

L1504180-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1504180-02 06/20/22 11:10 • (DUP) R3804957-4 06/20/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	880	829	1	5.97		20

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

Laboratory Control Sample (LCS)

(LCS) R3804957-2 06/20/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	280	105	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3808626-1 06/28/22 20:08

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) R3808626-2 06/28/22 20:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.7	91.7	80.0-120	

L1502682-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1502682-02 06/28/22 20:15 • (MS) R3808626-5 06/28/22 20:25 • (MSD) R3808626-6 06/28/22 20:29

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	99.8	4.09	87.3	88.4	83.2	84.3	5	75.0-125			1.28	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.
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.

Caerus Oil and 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: RA11 Flowline Investigation

City/State Collected: Piceance Creek CO

Phone: Fax: 970-640-6919

Client Project #

Lab Project # CAERUSPCO-KLEIN

Collected by (print): Jordan Veith

Site/Facility ID # RA11 Pad

P.O. #

Collected by (signature): Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: Standard

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Analysis / Container / Preservative: EC, pH, SAR, Arsenic	Remarks	Sample # (lab only)
20220610-RA11-BG01@1ft	Grab	SS	1ft	6/10/2022	10:45	2	X		-01
20220610-RA11-BG02@1ft	Grab	SS	1ft	6/10/2022	11:10	2	X		-02

6/10/2022

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

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Phone: 800-767-5859
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L # 150470

H153

Acctnum:
Template:
Prelogin:
TSR:
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 # 5437 8386 1060

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

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by: (Signature)	Date: 6/10/22	Time: 1500	Received by: (Signature)	Temp: 0.4 °C Bottles Received: 4	If preservation required by Login: Date/Time
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/11/22 Time: 0900	Hold: Condition: NCF / OK