

Blair Rollins
Environmental Specialist
Caerus Oil & Gas LLC (Operator #: 10456)
brollins@caerusoilandgas.com

Report of Work Completed – Historical Spill Investigations

ECMC Location Name (ID)	Story Gulch Unit /8505A-36 B36496 (415180)
Client Location Name	B36 496
ECMC Remediation Project #	19864
Legal Description	Lot 2 Sec. 36 T4S-R96W
Coordinates (Lat/Long)	39.664206 / -108.113367
County	Garfield County, Colorado

Mr. Rollins,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for Caerus Oil & Gas LLC (Caerus) to document recent investigation and remediation activities associated with historical releases of drilling mud, condensate, and produced water at the B36 496 well pad (Location). The Location is 14.5 miles north of Parachute, Colorado in Garfield County, as illustrated in the attached Topographic Location Map. Additional information on the Location and the associated remediation project is provided in the title block above, the attached Site Diagrams, and the attached Laboratory Results Summary Table. This ROWC provides background on the Location, methods used to complete the investigations, results of the investigations, and recommendations for how to proceed with this information.

Background

Between March 12, 2010, and February 15, 2011, five separate releases occurred on the Location, and all were consolidated under Colorado Energy and Carbon Management Commission (ECMC) Remediation Project Number 19864. The releases involved drilling mud, produced water, and condensate, resulting in spills confined to the working surface of the pad. Each release was promptly reported through ECMC Form 19 documentation.

A coordinated investigation and subsequent remedial excavations were performed by Confluence between September and November 2021. Soil sampling and analysis from potholes PH05, PH11, and PH12 indicated exceedances of ECMC Table 910-1 allowable limits for sodium adsorption ratio (SAR), pH, arsenic, and other constituents.

Further remedial excavations were conducted in October and November 2021 in response to the identified soil impacts. Caerus's request to close certain areas under ECMC Rule 915.f was approved via ECMC Form 27 document 402929590, while continued remediation efforts for PH05 were carried out to address benzo(A)pyrene and pH exceedances.

On October 20, 2022, Confluence coordinated and oversaw additional remedial excavation via mini excavator to address the benzo(A)pyrene and pH exceedances in the east sidewall of the PH05 excavation. Impacted material from the east sidewall was removed via excavation, and

one soil sample was collected from the newly exposed east sidewall. The soil sample was characterized using visual and olfactory observations and field screened using a photoionization detector (PID). Analytical results of the PH05 east sidewall soil sample indicate compliance with ECMC Table 915-1 RSSLs except for arsenic, at a concentration of 3.02 milligrams per kilogram (mg/kg). Based on the results of this and previous investigations, Caerus requested a reduced analytical suite for subsequent investigations to include pH only, which was approved via ECMC Form 27 supplemental Document 403369156.

Methodology

On July 18, 2023, Confluence coordinated and oversaw the advancement of potholes to delineate pH impacts vertically, as well as to the west, south, and north of the PH05 excavation. Four potholes were advanced via hydrovacuum truck to depths of 2.5 to 4 feet bgs. Soil samples collected from the terminus of each pothole were characterized using visual and olfactory observations and field screened using a PID. Each soil sample was collected in laboratory provided jars, immediately placed on ice, and shipped under a completed chain-of-custody form to Pace Analytical Services (Pace) for analysis of pH.

Results

These results summarize observations from onsite investigation efforts and associated field screening results. For organizational and presentation purposes the results summary is divided between general observations of lithology and hydrogeology for the entire Location and excavation activities.

Collected spatial data are depicted in the attached Site Diagrams. Laboratory analytical reports are attached and summarized in the Laboratory Results Summary Table.

Lithology and Hydrogeology

Lithology at the Location is characterized by sandy clay underlain by weathered shale. Groundwater is expected to flow southwest toward Davis Gulch and ultimately to the Colorado River, located 15.0 miles south of the Location. The Location is situated on a topographical high point as compared to the surrounding terrain, which slopes steeply to the east, south, and west toward unnamed ephemeral streams located 0.25 to 0.5 miles away. The elevation difference between the Location and Davis Gulch, situated approximately one mile to the southwest, is greater than 1400 feet. According to the Division of Water Resources, several monitoring wells are in place at the base of Davis Gulch. Well construction records for three wells within one mile of the Location, well permits 308243, 311688, and 311689, indicate depth to water at 23, 27, and 16.5 feet bgs, respectively. Based on this information no pathway for communication with groundwater appears to exist at the Location.

Delineation Results

Field screening did not indicate hydrocarbon staining or odor within the investigation area. PID measurements ranged from 1.9 to 48.9 parts per million (ppm). Analytical results exceed ECMC Table 915-1 RSSLs with pH values of 8.60 in SB01, 8.57 in SB02, and 8.63 in SB04.



Analysis and Recommendations

Based on soil analytical results and approved alternative allowable limits to date, levels of pH exceeding ECOM Table 915-1 RSSLs remain undelineated vertically and horizontally to the south and west. Confluence recommends a chemical treatment to remediate the pH exceedances within the release area. A mild concentration of citric acid and molasses, in the form pH Down, a product widely used in agriculture, should be applied over top of the impacted area and allowed to naturally permeate through the shallow shale and into areas where pH exceedances remain. Citric acid, when dissolved in water, leads to an increase in the concentration of H⁺ ions and subsequent acidification of the solution. Molasses contains organic acids and sugars that undergo fermentation by naturally occurring microorganisms. As the acid and sugar compounds are metabolized, lactic acid and acetic acid are produced as byproducts. The additional acids developed within the soil result in a decrease in pH levels. When application is complete, Confluence recommends a waiting period of one month prior to collecting confirmation soil samples.

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

Regards,

Andrew Smith

Andrew Smith
Project Manager
(435) 299-0643
andy.smith@confluence-cc.com



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

Attachments

- Topographic Location Map
- Site Diagram – PH05 Samples
- Laboratory Results Summary Table – PH05
- Laboratory Reports



Site Diagram PH05 Samples

Caerus Oil and Gas LLC

B36 496

(Story Gulch Unit/8505A-36 B36 496)



ECMC Location ID: 415180

Garfield County

Lot 2 Sec. 36 T4S-R96W

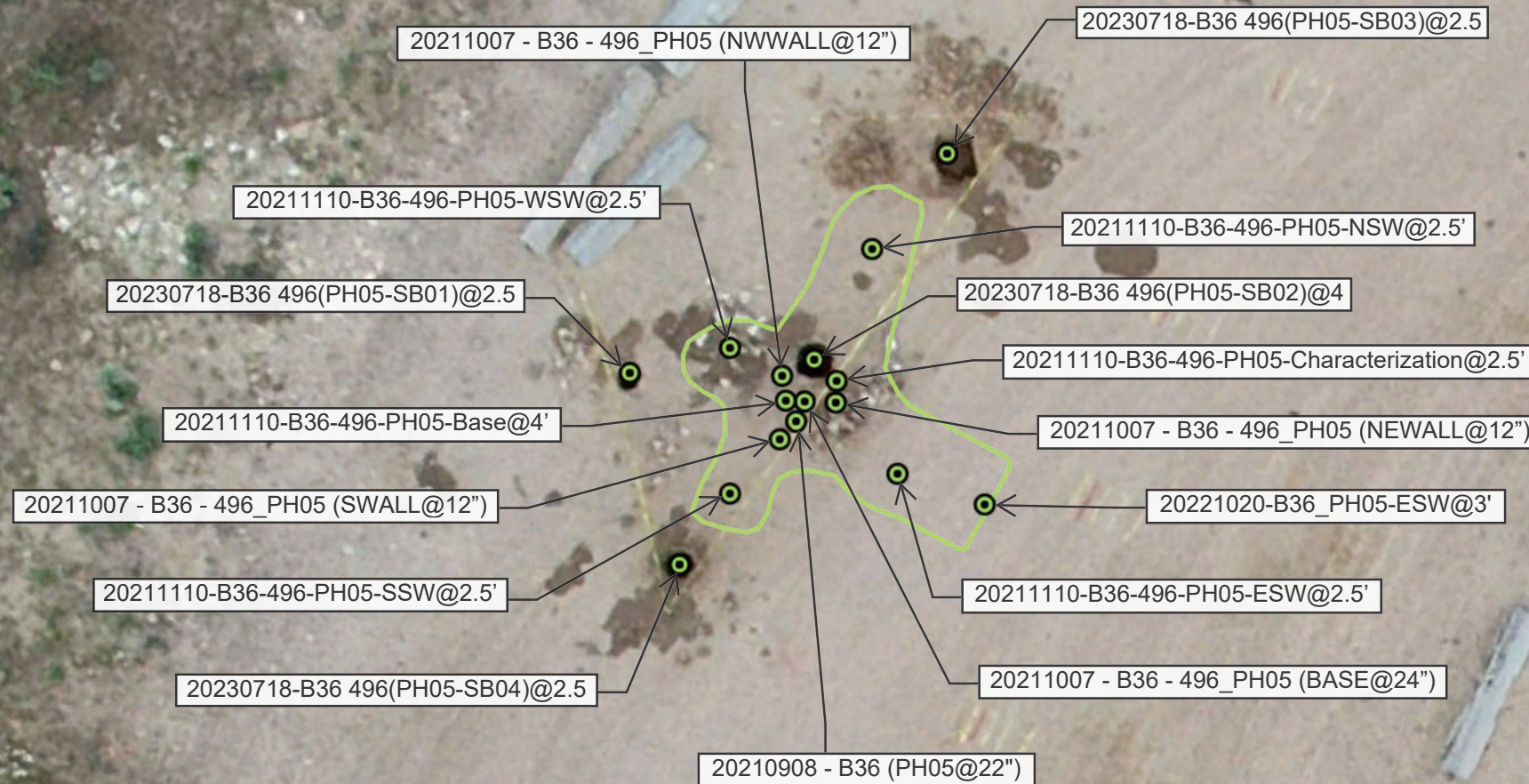


Legend

-  Soil Sample
-  Final Excavation Extent

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

Map created by: Amanda Baca on 11/10/2023.



ECMC Soil Screening Levels				Organic Compounds (mg/kg [ppm])																									
ECMC Table 915-1 Residential -->				NA	500	NA	NA	NA	1.2	490	5.8	58	30	27	360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	18	24	2	180
Sample Date	Solid Soil Source (Equipment [e.g., excavators, backhoes, dump trucks, etc.])	Depth - Z (feet) (NEGATIVE VALUE) below ground surface (bgs)	Sample ID	PID (ppm)	TPH (total volatile and extractable petroleum hydrocarbons) (GC-UKC-GRO)	TPH-GRO (GC-C10) Low Fraction	TPH-DRGO (C10-C28) High Fraction	TPH-ORGO (C28-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total (sum of o-, m-, p- isomers)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(A)pyrene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Chrysene	Dibenz(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-CD)pyrene	1- Methylanthralene	2- Methylanthralene	Naphthalene	Pyrene
7/18/2023	Pipeline	-2.5	20230718-836 496(PH05-SB01)@2.5	48.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/18/2023	Pipeline	-4	20230718-836 496(PH05-SB02)@4	34.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/18/2023	Pipeline	-2.5	20230718-836 496(PH05-SB03)@2.5	2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/18/2023	Pipeline	-2.5	20230718-836 496(PH05-SB04)@2.5	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/20/2022	Pipeline	-3	20221020-836 PH05-ESW@3'	3.5	97.4	0.340	<40.0	97.1	<0.00100	0.0823	0.00958	0.112	0.0179	0.0283	<0.00600	<0.00600	0.0323	0.0699	0.156	0.0402	0.0357	0.0348	0.0224	<0.00600	0.0820	<0.0200	0.0351	<0.0200	0.0140
11/10/2021	Pipeline	-4	20211110-836-496-PH05-BASE@4'	0	20.3	0.0466	20.3	NA	<0.00100	0.00210	<0.00250	0.00247	NA	NA	<0.00600	<0.00600	0.00663	0.00874	0.0302	0.00773	0.00913	0.00613	0.00673	<0.00600	0.0130	0.00821	0.0140	0.00696	0.00364
11/10/2021	Pipeline	-2.5	20211110-836-496-PH05-SSW@2.5	2.3	22.1	0.0868	22.0	NA	<0.00100	0.00318	<0.00250	0.00523	NA	NA	0.00358	<0.00600	0.0166	0.0254	0.0755	0.0160	0.0190	0.0147	0.0147	0.00378	0.0337	0.176	0.221	0.0988	0.0103
11/10/2021	Pipeline	-2.5	20211110-836-496-PH05-WSW@2.5	0.1	6.06	0.0287	6.03	NA	<0.00100	<0.00500	<0.00250	<0.00650	NA	NA	<0.00600	<0.00600	0.00295	0.00432	0.0139	0.00370	0.00375	0.00285	0.00361	<0.00600	0.00670	<0.0200	0.00461	<0.0200	0.00213
11/10/2021	Pipeline	-2.5	20211110-836-496-PH05-ESW@2.5	0.4	31.8	0.0462	31.8	NA	<0.00100	0.00340	<0.00250	0.0104	NA	NA	<0.00600	0.00561	0.0588	0.129	0.319	0.0751	0.0679	0.0650	0.0390	0.00228	0.167	0.0261	0.0357	0.0172	0.0210
11/10/2021	Pipeline	-2.5	20211110-836-496-PH05-NSW@2.5	0.7	30.7	0.0511	30.6	NA	<0.00100	0.00158	<0.00250	0.00235	NA	NA	0.00371	0.00281	0.0165	0.0201	0.0705	0.0138	0.0229	0.0118	0.0207	0.00357	0.0258	0.0206	0.0306	0.0149	0.0112
11/10/2021	Pipeline	-2	20211110-836-496-PH05-WC	0.1	81.73	0.132	81.60	NA	0.000675	0.00428	0.000975	0.00420	NA	NA	<0.00600	0.00683	0.0545	0.0696	0.245	0.0493	0.0776	0.0362	0.0723	0.00658	0.0846	0.0805	0.116	0.0547	0.0504
10/7/2021	Pipeline	-1	20211007-836-496-PH05(NW-WALL@12")	0.1	239	0.117	67.2	172	0.00103	0.0113	0.00225	0.0316	0.00220	0.00463	<0.00600	<0.00600	0.0243	0.0406	0.112	0.0250	0.0268	0.0209	0.0222	<0.00600	0.0446	0.0305	0.0424	0.0203	0.0123
10/7/2021	Pipeline	-1	20211007-836-496-PH05(NE-WALL@12")	0.6	206	0.0990	53.1	153	0.000775	0.0128	0.00183	0.0267	0.00188	0.00290	<0.00600	0.00378	0.0407	0.0647	0.174	0.0337	0.0430	0.0342	0.0398	0.00311	0.0696	0.0327	0.0481	0.0225	0.0235
10/7/2021	Pipeline	-1	20211007-836-496-PH05(SW-WALL@12")	2.1	199	0.0997	51.1	148	0.000842	0.0078	0.00200	0.0200	0.00171	0.00406	<0.00600	<0.00600	0.0209	0.0314	0.0970	0.0190	0.0227	0.0185	0.0193	<0.00600	0.0393	0.0219	0.0303	0.0140	0.0112
10/7/2021	Pipeline	-2	20211007-836-496-PH05(BASE@24")	0.9	131.4	0.111	32.8	98.5	0.00138	0.0132	0.00200	0.0245	0.00185	0.00235	<0.00600	0.00331	0.0317	0.0514	0.131	0.0276	0.0396	0.0266	0.0350	0.00446	0.0560	0.109	0.145	0.0643	0.0217
9/8/2021	Pipeline	-1.8	20210908 - 836 (PH05@22")	0.3	53.31	0.109	53.2	NA	0.000725	0.0112	0.00133	0.0251	NA	NA	<0.00600	0.00549	0.0449	0.0702	0.190	0.0448	0.0490	0.0298	0.0426	0.00259	0.0846	0.0390	0.0553	0.0260	0.0230

ECMC Soil Screening Levels					Soil Suitability for Reclamation				Metals (mg/kg [ppm])									
ECMC Table 915-1 Residential -->				NA	4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
Sample Date	Solid/Soil Source (Equipment) [Vault/Sump, Separator, Tank, Battery, Pump Line, Pit, Cuttings, Background, etc.]	Depth - Z (feet) (NEGATIVE VALUE) below ground surface (bgs)	Sample ID	PID (ppm)	EC (Specific Conductance) (millimhos/centimeter) (by saturated paste method)	SAR (Sodium Adsorption Ratio) (calculation) (by saturated paste method)	pH (pH Units) (by saturated paste method)	Boron - Hot Water Soluble (mg/L)	Arsenic	Barium	Cadmium (mg/kg)	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
7/18/2023	Pipeline	-2.5	20230718-B36 496(PH05-SB01)@2.5	48.9	NA	NA	8.60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/18/2023	Pipeline	-4	20230718-B36 496(PH05-SB02)@4	34.3	NA	NA	8.57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/18/2023	Pipeline	-2.5	20230718-B36 496(PH05-SB03)@2.5	2.4	NA	NA	8.29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/18/2023	Pipeline	-2.5	20230718-B36 496(PH05-SB04)@2.5	1.9	NA	NA	8.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/20/2022	Pipeline	-3	20221020-B36_PH05-ESW@3'	3.5	0.241	1.29	8.12	0.555	3.02	3120	<0.500	<1.00	19.2	12.4	18.7	<2.00	<1.00	42.5
11/10/2021	Pipeline	-4	20211110-B36-496-PH05-BASE@4'	0	0.220	1.60	8.81	0.451	2.57	2340	0.132	<2.00	18.8	15.5	20.8	<2.00	<1.00	46.4
11/10/2021	Pipeline	-2.5	20211110-B36-496-PH05-SSW@2.5	2.3	0.208	1.88	8.70	1.06	4.15	3770	0.0777	0.760	17.4	14.0	20.6	1.74	<1.00	43.1
11/10/2021	Pipeline	-2.5	20211110-B36-496-PH05-WSW@2.5	0.1	0.181	1.17	8.81	0.368	1.96	879	0.288	<2.00	16.9	11.9	20.2	1.09	<1.00	37.0
11/10/2021	Pipeline	-2.5	20211110-B36-496-PH05-ESW@2.5	0.4	0.274	2.08	8.63	1.39	3.24	4340	<0.500	<2.00	17.6	13.7	20.7	<2.00	<1.00	42.9
11/10/2021	Pipeline	-2.5	20211110-B36-496-PH05-NSW@2.5	0.7	0.213	1.58	8.54	1.01	3.09	2830	0.0669	<2.00	17.6	13.3	19.4	<2.00	<1.00	42.5
11/10/2021	Pipeline	-2	20211110-B36-496-PH05-WC	0.1	0.439	2.48	8.70	1.27	3.41	11000	<0.500	<2.0	17.3	9.46	13.4	<2.00	<1.00	36.1
10/7/2021	Pipeline	-1	20211007-B36-496-PH05(NWWALL@12")	0.1	0.334	2.29	8.96	1.03	2.28	4640	<0.500	<1.00	17.1	11.1	19.9	1.36	<1.00	39.8
10/7/2021	Pipeline	-1	20211007-B36-496-PH05(NEWALL@12")	0.6	0.284	1.82	8.82	0.785	3.59	6770	<0.500	<1.00	17.2	13.1	17.2	2.23	<1.00	37.8
10/7/2021	Pipeline	-1	20211007-B36-496-PH05(SWALL@12")	2.1	0.315	2.26	8.70	1.08	2.70	4520	<0.500	<1.00	15.3	10.0	16.9	1.76	<1.00	34.1
10/7/2021	Pipeline	-2	20211007-B36-496-PH05(BASE@24")	0.9	0.266	1.68	8.78	0.803	6.60	4200	<0.500	<1.00	18.7	12.8	18.4	1.41	<1.00	34.6
9/8/2021	Pipeline	-1.8	20210908 - B36 (PH05@22")	0.3	0.253	1.71	8.57	NA	2.74	5790	<0.500	<2.00	14.7	9.28	15.1	1.27	<1.00	34.6

Caerus Oil and Gas

Sample Delivery Group: L1637253
Samples Received: 07/20/2023
Project Number:
Description: B36 496 PHOS Assessment
Site: B36 496
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
20230718-B36 496(PH05-SB01(@2.5 L1637253-01	5
20230718-B36 496(PH05-SB02(@4 L1637253-02	6
20230718-B36 496(PH05-SB03(@2.5 L1637253-03	7
20230718-B36 496(PH05-SB04(@2.5 L1637253-04	8
Qc: Quality Control Summary	9
Wet Chemistry by Method 9045D	9
Gl: Glossary of Terms	10
Al: Accreditations & Locations	11
Sc: Sample Chain of Custody	12

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

SAMPLE SUMMARY

20230718-B36 496(PH05-SB01(@2.5 L1637253-01 Solid

Collected by
Olivia F

Collected date/time
07/18/23 09:50

Received date/time
07/20/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG2099152	1	07/21/23 11:36	07/21/23 13:00	MCC	Mt. Juliet, TN

¹Cp

²Tc

³Ss

20230718-B36 496(PH05-SB02(@4 L1637253-02 Solid

Collected by
Olivia F

Collected date/time
07/18/23 11:15

Received date/time
07/20/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG2099152	1	07/21/23 11:36	07/21/23 13:00	MCC	Mt. Juliet, TN

⁴Cn

⁵Sr

20230718-B36 496(PH05-SB03(@2.5 L1637253-03 Solid

Collected by
Olivia F

Collected date/time
07/18/23 11:50

Received date/time
07/20/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG2099152	1	07/21/23 11:36	07/21/23 13:00	MCC	Mt. Juliet, TN

⁶Qc

⁷Gl

20230718-B36 496(PH05-SB04(@2.5 L1637253-04 Solid

Collected by
Olivia F

Collected date/time
07/18/23 12:15

Received date/time
07/20/23 09:15

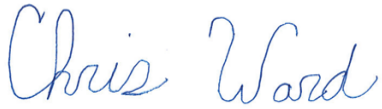
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG2099152	1	07/21/23 11:36	07/21/23 13:00	MCC	Mt. Juliet, TN

⁸Al

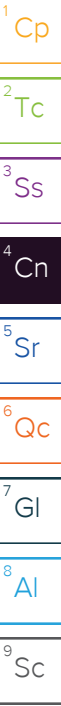
⁹Sc

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



Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.60	T8	1	07/21/2023 13:00	WG2099152

Sample Narrative:
L1637253-01 WG2099152: 8.6 at 23.4C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.57	T8	1	07/21/2023 13:00	WG2099152

Sample Narrative:
L1637253-02 WG2099152: 8.57 at 23.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.29	T8	1	07/21/2023 13:00	WG2099152

Sample Narrative:
L1637253-03 WG2099152: 8.29 at 23.1C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.63	T8	1	07/21/2023 13:00	WG2099152

Sample Narrative:
L1637253-04 WG2099152: 8.63 at 23.1C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1636895-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1636895-06 07/21/23 13:00 • (DUP) R3951304-2 07/21/23 13:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.74	7.70	1	0.518		1

Sample Narrative:

OS: 7.74 at 24.4C

DUP: 7.7 at 24.3C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1637309-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1637309-06 07/21/23 13:00 • (DUP) R3951304-3 07/21/23 13:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.32	8.32	1	0.000		1

Sample Narrative:

OS: 8.32 at 22.9C

DUP: 8.32 at 22.8C

Laboratory Control Sample (LCS)

(LCS) R3951304-1 07/21/23 13:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.99	99.9	99.0-101	

Sample Narrative:

LCS: 9.99 at 22.9C

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.

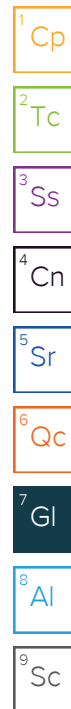
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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	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.

