



VIA ELECTRONIC MAIL –

July 19, 2023

Jake Janicek
EH&S Specialist
Caerus Piceance LLC
143 Diamond Avenue
Parachute, Colorado 81635

**Subject: Report of Work Completed
 H7 Dumpline Release
 Mamm Creek Field
 Garfield County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Piceance LLC (Caerus), conducted excavation oversight, field soil screening, landfarm confirmation soil sampling, and excavation confirmation soil sampling activities to confirm removal of defined hydrocarbon impacts associated with the production well KRK 7-7A dumpline release previously identified at the KRK-67S92W7SENE (H7) (Facility ID: 334864) pad location (Site). This document serves as a report of work completed (ROWC) which details the remediation activities completed in the second quarter of 2023. All previous investigative activities can be referenced under Colorado Oil and Gas Conservation Commission (COGCC) Remediation Project Number 20584. The Site is located in the Caerus Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

EXCAVATION AND CONFIRMATION SOIL SAMPLING ACTIVITIES – H7 DUMPLINE RELEASE

On June 8-9, June 12-16, and June 19-20, 2023, WSP personnel visited the Site to perform excavation oversight of the previously delineated hydrocarbon impacted soil located directly beneath the separator and west of the separator between the meter house and separator production unit associated with the production well KRK 7-7A dumpline release. Soil removal and storage was completed per the *Excavation Guidance Document* with the assistance of Western Colorado Oil Field Services, Inc. (WCO). During excavation activities, a WSP geologist conducted regular soil screening of the excavation soil as the excavation was advanced through visual inspection to determine the presence or absence of hydrocarbon odors and/or staining and through field screening the soil head space using a photoionization detector (PID) to monitor for the presence or absence of volatile organic compounds (VOCs), indicating if the soil was impacted. All impacted soil removed from the excavation was staged within a separate landfarm stockpile footprint located south of the excavation on the H7 pad. Non-impacted soil from the excavation was stored in two stockpiles located to the west and southeast of the excavation. An estimated 1,577.44 cubic yards of impacted material was removed from the excavation. The excavation was completed to a total depth of 32 feet below ground surface (bgs), at which field screening tests and previous investigations identified no indication of hydrocarbon impact remained. The final excavation extents are shown on Figure 2.

At the completion of excavation activities, on June 19 and June 20, 2023, confirmation soil samples were collected from all four excavation walls in each cardinal direction and from the base of the excavation. Two confirmation soil samples each were collected from the west and north walls at 20 and 30 feet bgs, and one confirmation soil sample each was collected from the east and south walls and the base of the excavation ranging from 30 feet to 32 feet bgs.

WSP USA
820 MEGAN AVENUE, UNIT B
RIFLE CO 81650

Tel.: 970-285-9985
wsp.com



On June 21 and June 22, 2023, WSP personnel collected additional confirmation soil samples from the walls and base of the excavation at 20 feet bgs; two confirmation soil samples were collected from the south wall and one confirmation soil sample was collected from the base of the excavation. All confirmation soil samples collected at depths of 30 feet bgs or greater were collected from the excavator bucket due to health and safety concerns regarding access to the open excavation. Prior to sample collection using the excavator bucket, all sampling surfaces were scraped to removed smeared areas and/or weathered material to ensure each sample was representative of an undisturbed, recently exposed surface. Additionally, all soil sampling equipment was properly decontaminated between sampling intervals to ensure collection of representative samples. A photographic log of the excavation activities, stockpile areas, and confirmation soil sampling is included as Enclosure A.

Field soil screening and investigative confirmation soil sampling activities were performed by a WSP geologist who inspected the soils for the presence or absence of petroleum hydrocarbon odor and/or staining. The soils were characterized by visually inspecting the soil and field screening the soil head space using a PID to monitor for the presence or absence of VOCs. Field screening results and observations are summarized in the tables below.

Field Soil Screening Results – June 19 and June 20, 2023

Confirmation Soil Sample ID	PID (ppm)	Notes	Submitted for Analysis
20230619-H7-(WW01)@20	74.3	No odor or staining	Reduced Suite
20230619-H7-(NW01)@20	10.3	No odor or staining	Reduced Suite
20230620-H7-(NW02)@30	20.3	No odor or staining	Reduced Suite
20230620-H7-(BASE01)@32	41.3	No odor or staining	Reduced Suite
20230620-H7-(EW01)@30	1.3	No odor or staining	Reduced Suite
20230620-H7-(WW02)@30	2.2	No odor or staining	Reduced Suite
20230620-H7-(SW01)@30	35.2	No odor or staining	Reduced Suite

Key:

PID – photoionization detector

ppm – parts per million

Field Soil Screening Results – June 21 and June 22, 2023

Confirmation Soil Sample ID	PID (ppm)	Notes	Submitted for Analysis
20230621-H7-(SW02)@20	35.2	No odor or staining	Reduced Suite
20230622-H7-(SW03)@20	42.3	No odor or staining	Reduced Suite
20230622-H7-(BASE02)@20	20.2	No odor or staining	Reduced Suite

Key:

PID – photoionization detector

ppm – parts per million

All soil samples were submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis of a reduced analytical suite previously approved by the Director [Document Number (DN) 403104348] which included total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. The approved analyte list was evaluated under the COGCC Table 915-1 Residential Soil Screening Level Concentrations (RSSLCs) as approved under DN 402898845.

LANDFARM STOCKPILE SOIL SAMPLING – H7 DUMPLINE RELEASE

On July 1, 2023, WSP personnel conducted initial characterization sampling of the landfarm soil stockpile at the Site. Prior to sampling activities, the landfarm footprint was mapped and four separate cells were delineated for sampling purposes. All mapped cells were representative of 500 cubic yards or less of soils in accordance with the approved landfarm sampling plan in DNs 403023769 and 403024689. A WSP geologist collected 5-point aliquot confirmation soil samples from each of the four landfarm cells. Three of the four cells consisted of approximately 500 cubic yards and the fourth cell consisted of approximately 77 cubic yards. Each aliquot sample was collected using a hand auger at approximately half the thickness of each stockpile cell, at a depth of approximately 2 feet bgs. All field sampling equipment was decontaminated with a liquinox water rinse prior to sampling and between each aliquot sample collection. Field soil screening and investigative confirmation soil sampling activities were



performed by a WSP geologist who inspected the soils for the presence or absence of petroleum hydrocarbon odor and/or staining. The soils were characterized by visually inspecting the soil and field screening the soil head space using a PID to monitor for the presence or absence of VOCs. Field screening results and observations are summarized in the table below.

Field Soil Screening Results – July 1, 2023

Sample ID	PID (ppm)	Notes	Submitted for Analysis
20230701-H7-(STOCK01)	475.6	No staining, odor	Reduced Suite
20230701-H7-(STOCK02)	760.2	No staining, odor	Reduced Suite
20230701-H7-(STOCK03)	468.4	No staining, odor	Reduced Suite
20230701-H7-(STOCK04)	232.5	No staining, odor	Reduced Suite

Key:

PID – photoionization detector

ppm – parts per million

All soil samples were submitted to Pace of Mount Juliet, Tennessee for analysis of a reduced analytical suite previously approved by the Director (DN 403104348) which included TPH, BTEX, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. The approved analyte list was evaluated under the COGCC Table 915-1 RSSLCs and Table 915-1 Cleanup Concentrations (CCs). The landfarm footprint and cell extents are depicted on Figure 3. A photographic log of the landfarm stockpile confirmation sampling is included as Enclosure A.

ANALYTICAL RESULTS – H7 DUMPLINE RELEASE

Laboratory analytical results of the ten confirmation soil samples collected at the Site along the sidewalls of the excavation between June 19 and June 22, 2023, were either below the laboratory method detection limit (MDL) or within the COGCC Table 915-1 RSSLCs.

Laboratory analytical reports of the four stockpile confirmation soil samples collected at the Site from the landfarm cells on July 1, 2023 indicate one aliquot confirmation soil sample - 20230701-H7-(STOCK02) exceeded the COGCC Table 915-1 Cleanup Concentrations (CCs) for TPH with a concentration of 559 mg/kg. The analytical exceedance is summarized in the table below. The remaining samples were either below the laboratory MDL or within the COGCC Table 915-1 RSSLCs or within the COGCC Table 915-1 CCs.

Summary of Landfarm Confirmation Soil Analytical Exceedance – July 1, 2023

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminant of Concern	Units	COGCC Cleanup Concentrations	Confirmation Soil Sample Concentration
20230701-H7-(STOCK02)	TPH	mg/kg	500	559

Key:

TPH – total petroleum hydrocarbons

mg/kg – milligrams per kilogram

The excavation confirmation laboratory analytical results are summarized in Table 1 and the landfarm stockpile analytical results are summarized in Table 2. The laboratory analytical reports are included in Enclosure B. The laboratory analytical results of the excavation and stockpile confirmation soil samples collected are depicted in the attached Figure 3.

REMEDIATION WORKPLAN ACTIVITIES – H7 DUMPLINE RELEASE

Based on the confirmation soil sample results collected from the excavation footprint between June 19 and June 22, 2023, all previously defined impacted soils have been removed from the excavation and placed in the landfarm. WSP recommends that Caerus request the Director of approval to use the non-impacted stockpiled soil and confirmed compliant landfarm soil from STOCK01, STOCK03, and STOCK04 to backfill the excavation footprint. Once the excavation is backfilled with the non-impacted and compliant soils, the one remaining cell STOCK02 will be spread out within the landfarm over a larger area as to expel the remaining volatiles in the soil at a faster rate. All



landfarm soil representative of STOCK02 (approximately 500 cubic yards) will continue to be stored in an earthen containment berm on the working surface of the pad. Compliance sampling of the landfarm soil will continue, in which composite soil samples will be collected, characterized, field screened, and analyzed following the procedures described in the *Land Farm Stockpile Soil Sampling* section above, until all constituents listed under the Director's approved analyte suite are compliant under COGCC Table 915-1 RSSLCs and COGCC Table 915-1 CCs. Once the landfarm soil of STOCK02 cell indicates compliance with the COGCC Table 915-1 RSSLCs, the soil representative of STOCK02 will be used to backfill the open excavation with prior approval from the Director. Once all landfarm soil is confirmed compliant and approval from the Director has been granted to backfill the remaining excavation, one composite soil sample for every 500 square feet of surface area beneath impacted material landfarm footprint will be collected to verify compliance with Table 915-1 after removal of treated materials from landfarm (DN 402955802).

Please contact us at (970) 618-4514 or (970) 658-7025 if you have any questions regarding this report or require additional information.

Kind regards,

A handwritten signature in blue ink, appearing to read 'D. Held'.

Dustin Held
Sr. Consultant, Environmental Geologist

A handwritten signature in blue ink, appearing to read 'Parker Coit'.

Parker Coit, P.G.
Lead Consultant, Geologist

Encl.

FIGURES

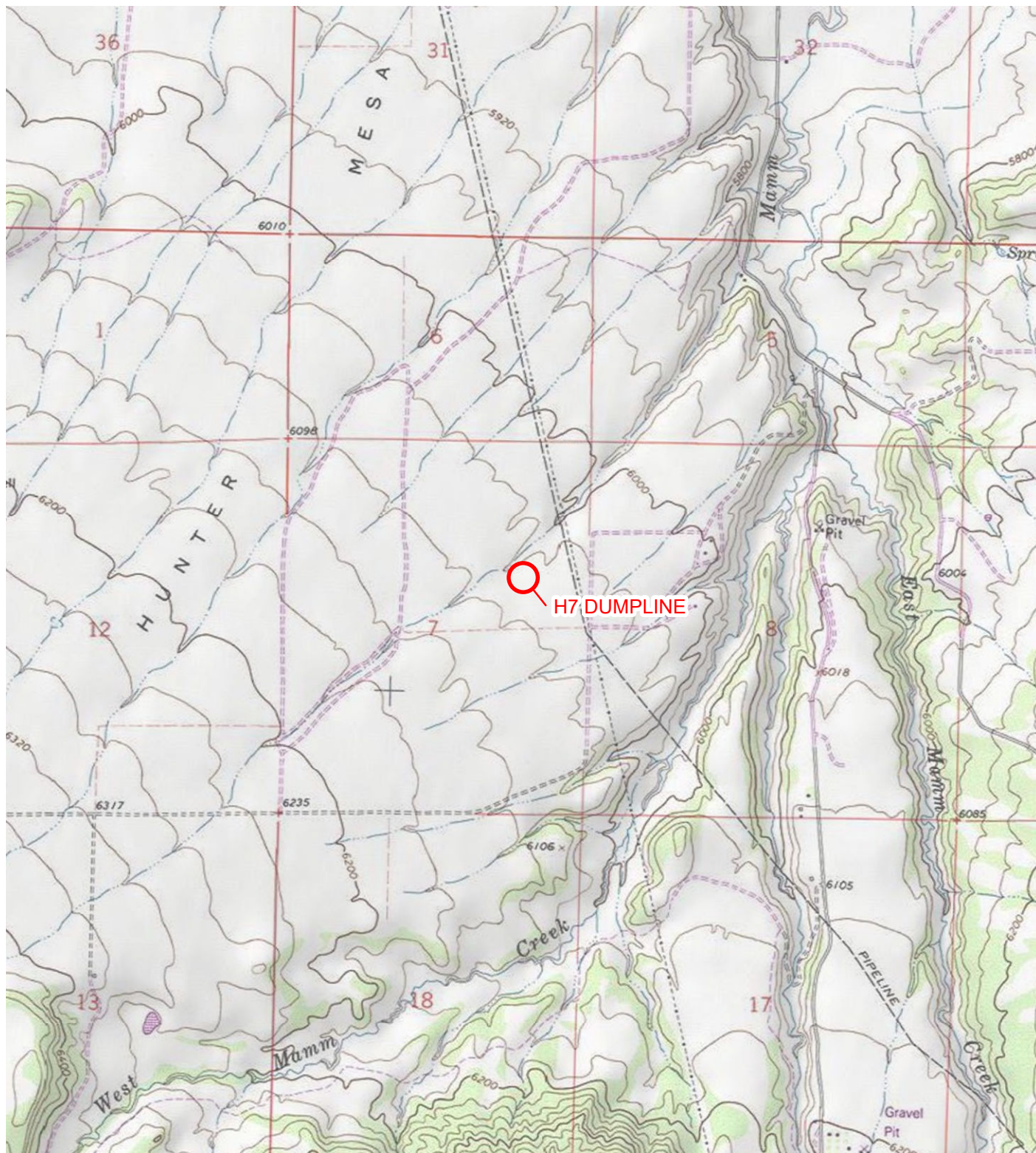


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

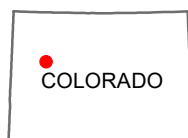
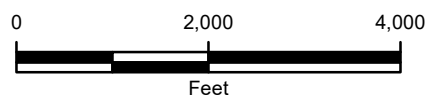
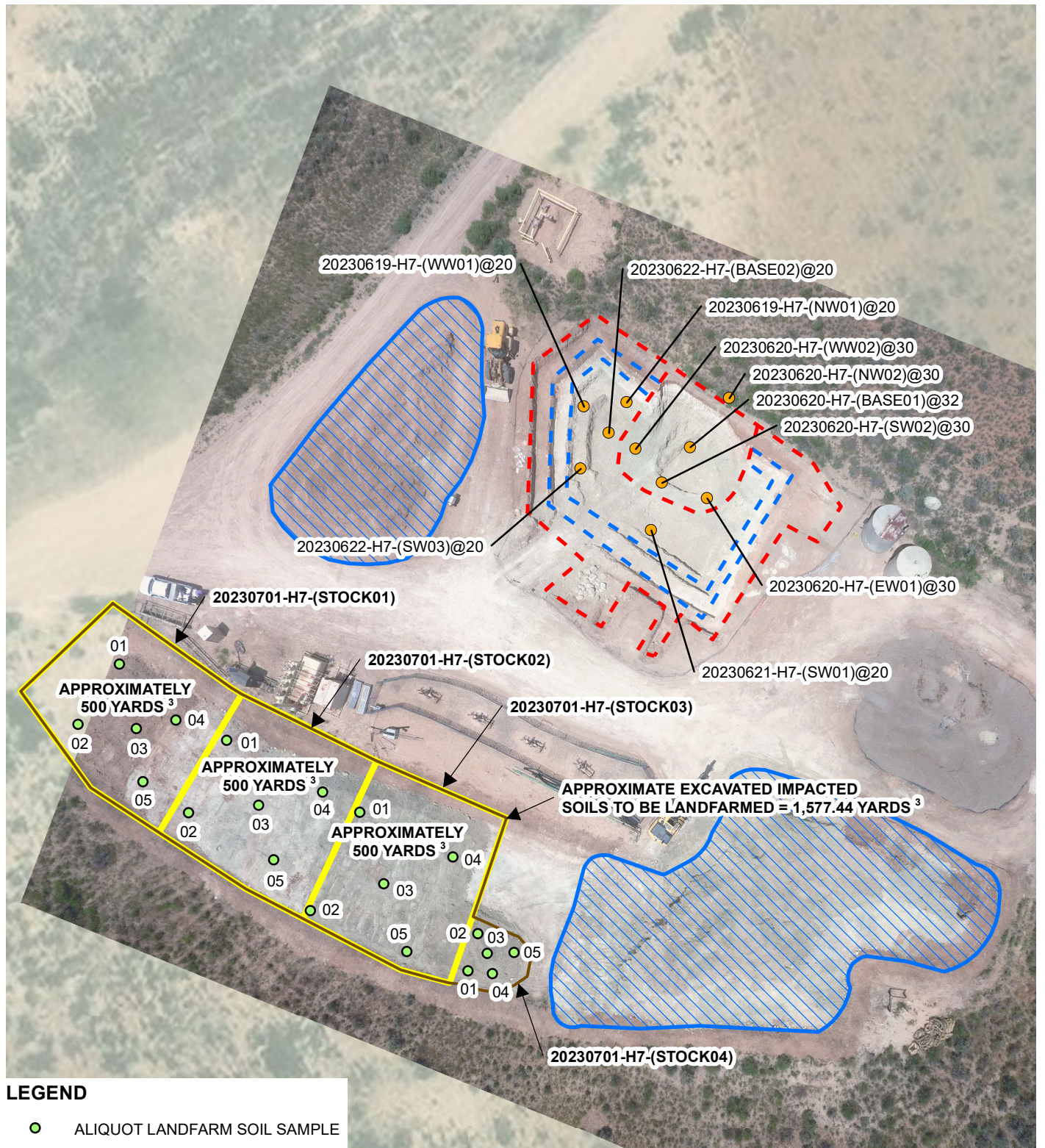


FIGURE 1
SITE LOCATION MAP
H7 DUMPLINE
SENE SEC 7-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC





LEGEND

- ALIQUOT LANDFARM SOIL SAMPLE
- EXCAVATION SOIL SAMPLE
- EXCAVATION BENCH
- DESIGNED EXCAVATION EXTENT CLASS B SOILS
- APPROXIMATE 500 CUBIC YARDS SAMPLING AREA
- LANDFARM AREA
- CLEAN STOCKPILE

BACKGROUND IMAGE COURTESY OF ESRI (MAXAR 2018)
 FOREGROUND IMAGE COURTESY OF WSP DRONE SURVEY JULY 5, 2023

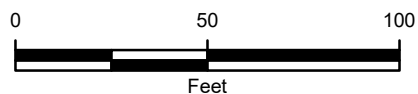
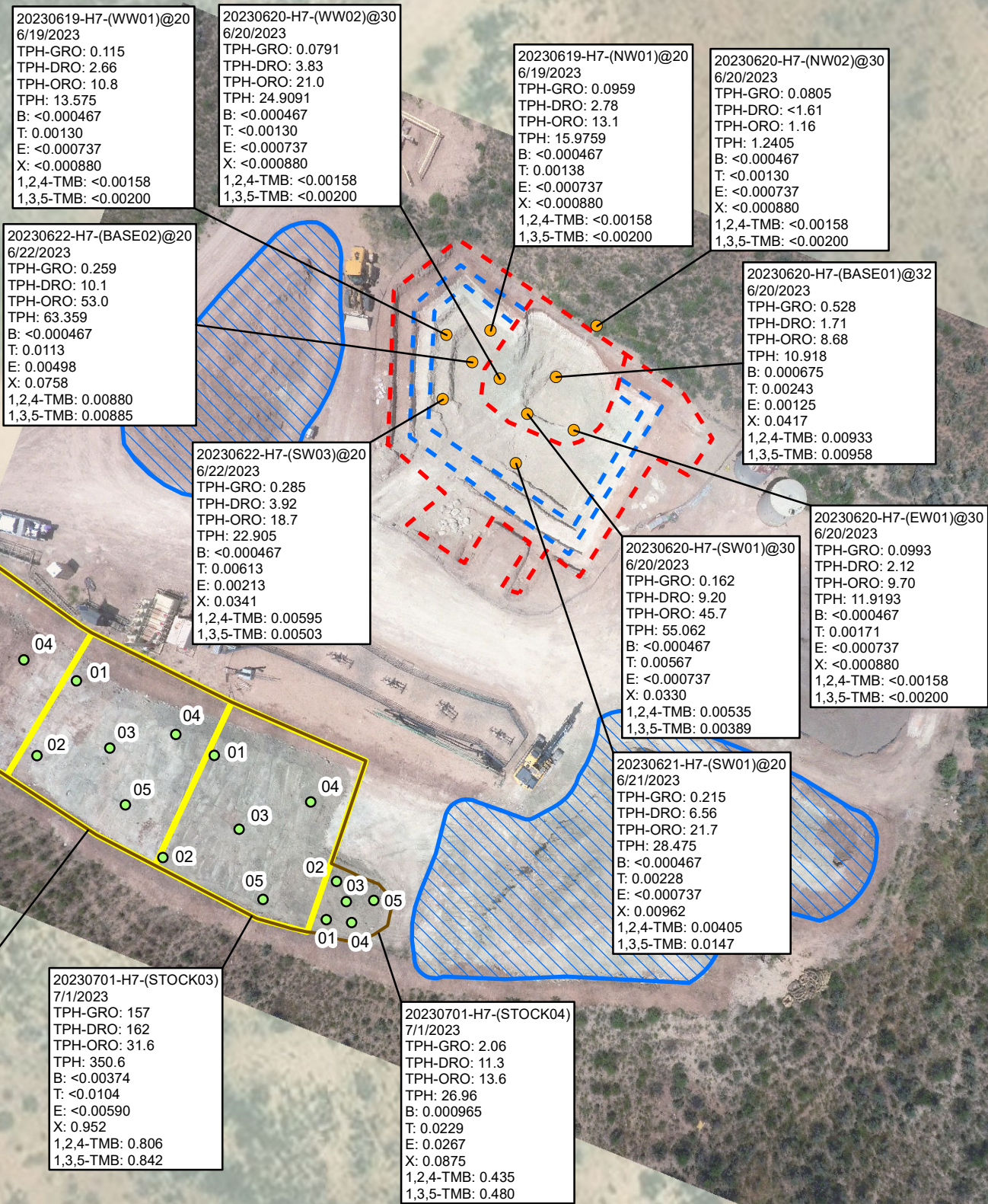


FIGURE 2
EXCAVATION SAMPLE LOCATION MAP
H7 DUMPLINE
SENE SEC 7-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC



SAMPLE ID
SAMPLE DATE
TPH-GRO: TOTAL PETROLEUM HYDROCARBINS - OIL RANGE ORGANICS (mg/kg)
TPH-DRO: TOTAL PETROLEUM HYDROCARBINS - GASOLINE RANGE ORGANICS (mg/kg)
TPH-ORO: TOTAL PETROLEUM HYDROCARBINS - DIESEL RANGE ORGANICS (mg/kg)
TPH: TOTAL PETROLEUM HYDROCARBINS (mg/kg)
B: BENZENE (mg/kg)
T: TOLUENE (mg/kg)
E: ETHYLBENZENE (mg/kg)
X: TOTAL XYLENES (mg/kg)
1,2,4-TMB: 1,2,4-TRIMETHYLBENZE (mg/kg)
1,3,5-TMB: 1,3,5-TRIMETHYLBENZE (mg/kg)
mg/kg: MILLIGRAMS PER KILOGRAM
< LESS THAN LABORATORY REPORTING LIMIT



LEGEND

- ALIQUOT LANDFARM SOIL SAMPLE
- EXCAVATION SOIL SAMPLE
- - - EXCAVATION BENCH
- - - DESIGNED EXCAVATION EXTENT
- CLASS B SOILS
- APPROXIMATE 500 CUBIC YARDS SAMPLING AREA
- LANDFARM AREA
- CLEAN STOCKPILE

BACKGROUND IMAGE COURTESY OF ESRI (MAXAR 2018)
FOREGROUND IMAGE COURTESY OF WSP DRONE SURVEY JULY 5, 2023

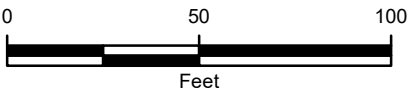


FIGURE 3
SOIL ANALYTICAL RESULTS
H7 DUMPLINE
SENE SEC 7-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC



TABLES

TABLE 1

SOIL ANALYTICAL RESULTS

H7 DUMPLINE

GARFIELD COUNTY, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES				
				20230619-H7-(WW01)@20	20230619-H7-(NW01)@20	20230620-H7-(NW02)@30	20230620-H7-(BASE01)@32	20230620-H7-(EW01)@30
Sample Date				6/19/2023	6/19/2023	6/20/2023	6/20/2023	6/20/2023
Sample Depth (feet)				20	20	30	30	30
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	NA	NA	NA	NA	NA
Barium	15,000	82 (M)	mg/kg	NA	NA	NA	NA	NA
Boron	2	2	mg/l	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	NA	NA	NA	NA	NA
TPH-GRO			mg/kg	0.115	0.0959	0.0805	0.528	0.0993
TPH-DRO			mg/kg	2.66	2.78	<1.61	1.71	2.12
TPH-ORO			mg/kg	10.8	13.1	1.16	8.68	9.70
TPH	500	500	mg/kg	13.575	15.9759	1.2405	10.918	11.9193
Benzene	1.2	0.0026 (M)	mg/kg	<0.000467	<0.000467	<0.000467	0.000675	<0.000467
Toluene	490	0.69 (M)	mg/kg	0.00130	0.00138	<0.00130	0.00243	0.00171
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.000737	<0.000737	<0.000737	0.00125	<0.000737
Total Xylenes	58	9.9 (M)	mg/kg	<0.000880	<0.000880	<0.000880	0.0417	<0.000880
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00158	<0.00158	<0.00158	0.00933	<0.00158
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00200	<0.00200	<0.00200	0.00958	<0.00200
Acenaphthene	360	5.8 (R)	mg/kg	NA	NA	NA	NA	NA
Anthracene	1,800	0.55 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.11 (R)	mg/kg	NA	NA	NA	NA	NA
Fluoranthene	240	0.096 (R)	mg/kg	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	mg/kg	NA	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	mg/kg	NA	NA	NA	NA	NA
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA

NOTES:

ND - less than the stated reporting limit

BOLD - indicates result exceeds the COGCC concentration level

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/kg - milligrams per kilogram

mg/l - milligrams per liter

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum containment level (M)

TABLE 1

SOIL ANALYTICAL RESULTS

H7 DUMPLINE

GARFIELD COUNTY, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES				
				20230620-H7-(WW02)@30	20230620-H7-(SW01)@30	20230621-H7-(SW02)@20	20230622-H7-(SW03)@20	20230622-H7-(BASE02)@20
Sample Date				6/20/2023	6/20/2023	6/21/2023	6/23/2023	6/23/2023
Sample Depth (feet)				30	30	20	20	20
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	NA	NA	NA	NA	NA
Barium	15,000	82 (M)	mg/kg	NA	NA	NA	NA	NA
Boron	2	2	mg/l	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	NA	NA	NA	NA	NA
TPH-GRO			mg/kg	0.0791	0.215	0.162	0.285	0.259
TPH-DRO			mg/kg	3.83	6.56	9.20	3.92	10.1
TPH-ORO			mg/kg	21.0	21.7	45.7	18.7	53.0
TPH	500	500	mg/kg	24.9091	28.475	55.062	22.905	63.359
Benzene	1.2	0.0026 (M)	mg/kg	<0.000467	<0.000467	<0.000467	<0.000467	<0.000467
Toluene	490	0.69 (M)	mg/kg	<0.00130	0.00228	0.00567	0.00613	0.0113
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.000737	<0.000737	<0.000737	0.00213	0.00498
Total Xylenes	58	9.9 (M)	mg/kg	<0.000880	0.00962	0.0330	0.0341	0.0758
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00158	0.00405	0.00535	0.00595	0.00880
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00200	0.0147	0.00389	0.00503	0.00885
Acenaphthene	360	5.8 (R)	mg/kg	NA	NA	NA	NA	NA
Anthracene	1,800	0.55 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.11 (R)	mg/kg	NA	NA	NA	NA	NA
Fluoranthene	240	0.096 (R)	mg/kg	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	mg/kg	NA	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	mg/kg	NA	NA	NA	NA	NA
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA

NOTES:

ND - less than the stated reporting limit

BOLD - indicates result exceeds the COGCC concentration level

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/kg - milligrams per kilogram

mg/l - milligrams per liter

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum containment level (M)

TABLE 2
LANDFARM SOIL ANALYTICAL RESULTS
H7 DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLE			
				20230701-H7-(STOCK01)	20230701-H7-(STOCK02)	20230701-H7-(STOCK03)	20230701-H7-(STOCK04)
Sample Date				7/1/2023	7/1/2023	7/1/2023	7/1/2023
Sample Depth (feet)				2	2	2	2
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	NA	NA	NA	NA
Barium	15,000	82 (M)	mg/kg	NA	NA	NA	NA
Boron	2	2	mg/l	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA
SAR	<6	<6	unitless	NA	NA	NA	NA
TPH-GRO			mg/kg	262	169	157	2.06
TPH-DRO			mg/kg	45.7	320	162	11.3
TPH-ORO			mg/kg	2.18	70.0	31.6	13.6
TPH	500	500	mg/kg	309.9	559.0	350.6	26.96
Benzene	1.2	0.0026 (M)	mg/kg	<0.000467	<0.00374	<0.00374	0.000965
Toluene	490	0.69 (M)	mg/kg	<0.00130	<0.0104	<0.0104	0.0229
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.000767	<0.00590	<0.00590	0.0267
Total Xylenes	58	9.9 (M)	mg/kg	2.19	0.534	0.952	0.0875
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	2.31	0.595	0.806	0.435
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	4.89	2.33	0.842	0.480
Acenaphthene	360	5.8 (R)	mg/kg	NA	NA	NA	NA
Anthracene	1,800	0.55 (R)	mg/kg	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.11 (R)	mg/kg	NA	NA	NA	NA
Fluoranthene	240	0.096 (R)	mg/kg	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	mg/kg	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	mg/kg	NA	NA	NA	NA
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA

NOTES:
ND - less than the stated reporting limit
BOLD - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/kg - milligrams per kilogram
mg/l - milligrams per liter
mmhos/cm - millimhos per centimeter
SAR - sodium adsorption ratio
SU - standard unit
TPH-ORO - total petroleum hydrocarbons- oil range organics
TPH-GRO - total petroleum hydrocarbons-gasoline range organics
TPH-DRO - total petroleum hydrocarbons-diesel range organics
TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO
NA - analyte not analyzed
ND - analyte not detected
R - risk based
MCL - maximum containment level (M)

ENCLOSURE A – PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013


Photo No.	Date	
1	June 8, 2023	
Site when first arrived in the morning; view northwest		

Photo No.	Date	
2	June 8, 2023	
Start of excavation from the east side of the north wall; view west		

Photo No.	Date	
3	June 8, 2023	
Land farming area; view east		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
4	June 8, 2023	
Impacted soil from area underneath the separator; view southeast		

Photo No.	Date	
5	June 8, 2023	
Excavation extent at the end of the day, prior to perimeter fence install, view north		

Photo No.	Date	
6	June 8, 2023	
Land farming location, with containment berms; view east		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
7	June 9, 2023	
Final extent of excavation for the day view west		

Photo No.	Date	
7	June 9, 2023	
Land farm site view southeast		

Photo No.	Date	
7	June 9, 2023	
Clean spoil piles in the Southwest corner of the site view southwest		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
1	June 12, 2023	
Full extent of initial 5 feet of excavation; view west		

Photo No.	Date	
2	June 12, 2023	
West wall showing 5 feet on a tape measure; view west		

Photo No.	Date	
3	June 12, 2023	
Benching 10 feet bgs in the northwest corner; view north		


--

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
4	June 12, 2023	
Clean stockpile in the southeast corner of site; view south		

Photo No.	Date	
5	June 12, 2023	
Excavation extent by the end of the day; view north		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
1	June 13, 2023	
Building ramp for the clean spoils pile; view southeast		

Photo No.	Date	
2	June 13, 2023	
Benching 10 feet bgs into the west wall showing 5 feet on a tape measure; view west		

Photo No.	Date	
3	June 13, 2023	
Benching 10 feet bgs into the east wall, showing 5 feet on a tape measure; view east		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
4	June 13, 2023	
Impacted soil south of the north wall; view north		

Photo No.	Date	
5	June 13, 2023	
Impacted soil in landfarm footprint; view southwest		

Photo No.	Date	
5	June 13, 2023	
Excavation extent at the end of the day; view west		



PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
1	June 14, 2023	
Excavation activities to begin the morning; view west		

Photo No.	Date	
2	June 14, 2023	
Excavation at 15 feet in the northwest corner; view east		

Photo No.	Date	
3	June 14, 2023	
Excavation at 15 feet in the southeast corner; view west		

PHOTOGRAPHIC LOG

Caerus Piceance LLC

H7 Dumpline

31403501.013

Photo No.	Date	
4	June 14, 2023	
Excavation extent by end of the day, from top of clean spoils pile; view northwest		

Photo No.	Date	
5	June 14, 2023	
Excavation extent by the end of the day from the ramp; view north		

Photo No.	Date	
5	June 14, 2023	
Landfarm site from top of clean spoils pile; view west		

PHOTOGRAPHIC LOG

Caerus Piceance LLC	H7 Dumpline	31403501.013
---------------------	-------------	--------------

Photo No.	Date	
1	June 15, 2023	
Excavation activities to begin the morning; view east		

Photo No.	Date	
2	June 15, 2023	
Excavated impacted soils; view east		

Photo No.	Date	
3	June 15, 2023	
Landfarm site; view west		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
4	June 15, 2023	
Excavation extent by end of the day; view northwest		

Photo No.	Date	
5	June 15, 2023	
Clean spoils pile; view southwest		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013


Photo No.	Date	
1	June 16, 2023	
Excavation activities to begin the morning; view north		

Photo No.	Date	
2	June 16, 2023	
Early morning activities required excavators to make an assembly line; view east		

Photo No.	Date	
3	June 16, 2023	
Impacted soils due south of the north wall; view south		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
4	June 16, 2023	
Excavation extent by end of the day; view northwest		

Photo No.	Date	
5	June 16, 2023	
Land farm site; view west		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
1	June 19, 2023	
Excavation activities to begin the morning; view west		





Photo No.	Date	
2	June 19, 2023	
Completion sample collected on the west wall at 20 feet; view west		

Photo No.	Date	
3	June 19, 2023	
Completion sample collected on the north wall at 20 feet; view south		



PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
4	June 19, 2023	
Excavation extent after finishing the bench at 20 feet; view west		

Photo No.	Date	
5	June 19, 2023	
Excavation extent by the end of the day; view north		

Photo No.	Date	
6	June 19, 2023	
Land farm site; view west		



PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
1	June 20, 2023	
Excavation activities to begin the morning; view west		


Photo No.	Date	
2	June 19, 2023	
Excavating down to 30 feet in impact zone; view north		

Photo No.	Date	
3	June 19, 2023	
Clean spoils pile; view south		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013


Photo No.	Date	
4	June 19, 2023	
Excavation perimeter fenced in after the final impacted soils were unearthed; view north		

Photo No.	Date	
5	June 19, 2023	
Landfarm site; view east		

Photo No.	Date	
6	June 19, 2023	
Far west end of the site; view east		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date		
1	June 22, 2023		
South wall sample location 20230622-H7-(SW03)@20; view south			

Photo No.	Date		
2	June 22, 2023		
West base sample location 20230622-H7-(BASE02)@20; view northeast			

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013


Photo No.	Date	
1	July 1, 2023	
Landfarm footprint overview; View southeast		

Photo No.	Date	
2	July 1, 2023	
Landfarm footprint overview; View east		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013


Photo No.	Date	
3	July 1, 2023	
Landfarm footprint overview; View south		

Photo No.	Date	
3	July 1, 2023	
Landfarm footprint overview; View west		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	H7 Dumpline	31403501.013

Photo No.	Date	
5	July 1, 2023	
Landfarm footprint overview; View northwest		

Photo No.	Date	
6	July 1, 2023	
20230701-H7-(STOCK03)@2 northwest aliquot sample location		

ENCLOSURE B – LABORATORY ANALYTICAL REPORTS

Caerus Oil and Gas

Sample Delivery Group: L1628269
Samples Received: 06/21/2023
Project Number: H7
Description: H7-Dumpline
Site: H7
Report To: Jake J. , Brett M. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Jason Romer
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
20230619-H7-(WW01)@20 L1628269-01	5
20230619-H7-(NW01)@20 L1628269-02	6
Qc: Quality Control Summary	7
Volatile Organic Compounds (GC) by Method 8015D/GRO	7
Volatile Organic Compounds (GC/MS) by Method 8260B	8
Semi-Volatile Organic Compounds (GC) by Method 8015M	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

20230619-H7-(WW01)@20 L1628269-01 Solid

Collected by Ben Herrmann
Collected date/time 06/19/23 12:20
Received date/time 06/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2085081	1	06/25/23 13:41	06/27/23 18:20	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2085158	1	06/25/23 13:41	06/27/23 17:46	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2084419	1	06/27/23 09:23	06/27/23 23:47	KAP	Mt. Juliet, TN

20230619-H7-(NW01)@20 L1628269-02 Solid

Collected by Ben Herrmann
Collected date/time 06/19/23 12:30
Received date/time 06/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2085081	1	06/25/23 13:41	06/27/23 18:38	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2085158	1	06/25/23 13:41	06/27/23 18:06	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2084419	1	06/27/23 09:23	06/28/23 00:00	KAP	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

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.



Jason Romer
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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	0.115		0.0217	0.100	1	06/27/2023 18:20	WG2085081
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.3			77.0-120		06/27/2023 18:20	WG2085081

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	06/27/2023 17:46	WG2085158
Toluene	0.00130	J	0.00130	0.00500	1	06/27/2023 17:46	WG2085158
Ethylbenzene	U		0.000737	0.00250	1	06/27/2023 17:46	WG2085158
Xylenes, Total	U		0.000880	0.00650	1	06/27/2023 17:46	WG2085158
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	06/27/2023 17:46	WG2085158
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	06/27/2023 17:46	WG2085158
(S) Toluene-d8	101			75.0-131		06/27/2023 17:46	WG2085158
(S) 4-Bromofluorobenzene	90.3			67.0-138		06/27/2023 17:46	WG2085158
(S) 1,2-Dichloroethane-d4	92.3			70.0-130		06/27/2023 17:46	WG2085158

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	2.66	J	1.61	4.00	1	06/27/2023 23:47	WG2084419
C28-C36 Motor Oil Range	10.8		0.274	4.00	1	06/27/2023 23:47	WG2084419
(S) o-Terphenyl	43.3			18.0-148		06/27/2023 23:47	WG2084419

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	0.0959	J	0.0217	0.100	1	06/27/2023 18:38	WG2085081
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.5			77.0-120		06/27/2023 18:38	WG2085081

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	06/27/2023 18:06	WG2085158
Toluene	0.00138	J	0.00130	0.00500	1	06/27/2023 18:06	WG2085158
Ethylbenzene	U		0.000737	0.00250	1	06/27/2023 18:06	WG2085158
Xylenes, Total	U		0.000880	0.00650	1	06/27/2023 18:06	WG2085158
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	06/27/2023 18:06	WG2085158
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	06/27/2023 18:06	WG2085158
(S) <i>Toluene-d8</i>	98.3			75.0-131		06/27/2023 18:06	WG2085158
(S) <i>4-Bromofluorobenzene</i>	87.8			67.0-138		06/27/2023 18:06	WG2085158
(S) <i>1,2-Dichloroethane-d4</i>	97.6			70.0-130		06/27/2023 18:06	WG2085158

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	2.78	J	1.61	4.00	1	06/28/2023 00:00	WG2084419
C28-C36 Motor Oil Range	13.1		0.274	4.00	1	06/28/2023 00:00	WG2084419
(S) <i>o</i> -Terphenyl	58.2			18.0-148		06/28/2023 00:00	WG2084419

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3942048-2 06/27/23 13:27

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)	99.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3942048-1 06/27/23 12:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.33	96.9	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.8	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3942404-2 06/27/23 11:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	99.5			75.0-131
(S) 4-Bromofluorobenzene	91.6			67.0-138
(S) 1,2-Dichloroethane-d4	93.8			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3942404-1 06/27/23 10:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.127	102	70.0-123	
Toluene	0.125	0.113	90.4	75.0-121	
Ethylbenzene	0.125	0.115	92.0	74.0-126	
Xylenes, Total	0.375	0.338	90.1	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.109	87.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.118	94.4	73.0-127	
(S) Toluene-d8			96.5	75.0-131	
(S) 4-Bromofluorobenzene			93.4	67.0-138	
(S) 1,2-Dichloroethane-d4			103	70.0-130	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3942011-1 06/27/23 23:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.619	⬇	0.274	4.00
(S) o-Terphenyl	50.8			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3942011-2 06/27/23 23:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	25.8	51.6	50.0-150	
(S) o-Terphenyl			50.2	18.0-148	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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.
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.
---	---

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

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

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

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



Caerus Oil & Gas LLC
143 Diamond Avenue
Parachute, CO 81635
970-285-9606

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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



L# 1628269
I124

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks Sample # (lab only)

Report to:
bmiddleton@caerusoilandgas.com

Email To:
bmiddleton@caerusoilandgas.com

Project
Description: H7-Dumpline

City/State
Collected: Mamm Creek, CO

Phone:
Fax:

Client Project #
H7

Lab Project #
H7

Collected by (print):
Ben Herrmann

Site/Facility ID #
H7

P.O. #
H7

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Date Results Needed

Standard TAT

Immediately
Packed on Ice N Y X

No.
of
Cnts

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

20230619-H7-(WW01)@20

Grab

SS

20

06/19/2023

12:20

1

X

X

X

X

20230619-H7-(NW01)@20

Grab

SS

20

06/19/2023

12:30

1

X

X

X

X

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

* 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 #

6126 0537 3681

Relinquished by: (Signature)

Date:

06/19/2023

Time:

17:10

Received by: (Signature)

AA

6/20/23 1200

Trip Blank Received: Yes/No

HCL/MeOH
TBR

Relinquished by: (Signature)

Date:

6/20/23

Time:

1500

Received by: (Signature)

Temp: 7.5 °C

Bottles Received:

4.5+0=4.5

Z

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Eri Dorratt 17

Date:

6-21-23

Time:

900

Hold:

Condition:

NCF / OK


July 11, 2023

Revised Report

Caerus Oil and Gas

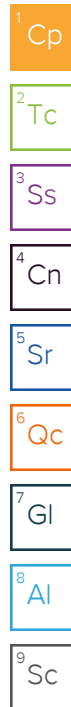
Sample Delivery Group: L1629042
Samples Received: 06/23/2023
Project Number: H7
Description: H7-Dumpline
Site: H7
Report To: Jake J. , Brett M. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

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.

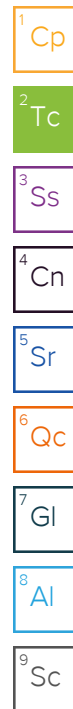


Pace Analytical National

12065 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
20230620-H7-(NW02)@30 L1629042-01	5
20230620-H7-(BASE01)@32 L1629042-02	6
20230620-H7-(EW01)@30 L1629042-03	7
20230620-H7-(WW02)@30 L1629042-04	8
20230620-H7-(SW01)@30 L1629042-05	9
Qc: Quality Control Summary	10
Volatile Organic Compounds (GC) by Method 8015D/GRO	10
Volatile Organic Compounds (GC/MS) by Method 8260B	12
Semi-Volatile Organic Compounds (GC) by Method 8015M	13
Gl: Glossary of Terms	14
Al: Accreditations & Locations	15
Sc: Sample Chain of Custody	16



SAMPLE SUMMARY

20230620-H7-(NW02)@30 L1629042-01 Solid

Collected by Ben Herrman
Collected date/time 06/20/23 08:45
Received date/time 06/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086231	1	06/27/23 21:04	06/29/23 06:45	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2086667	1	06/27/23 21:04	06/29/23 16:21	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2086104	1	06/28/23 17:32	06/29/23 11:29	ICD	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20230620-H7-(BASE01)@32 L1629042-02 Solid

Collected by Ben Herrman
Collected date/time 06/20/23 09:05
Received date/time 06/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086231	1	06/27/23 21:04	06/29/23 07:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2086667	1	06/27/23 21:04	06/29/23 16:40	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2086104	1	06/28/23 17:32	06/29/23 12:35	KAP	Mt. Juliet, TN

20230620-H7-(EW01)@30 L1629042-03 Solid

Collected by Ben Herrman
Collected date/time 06/20/23 09:20
Received date/time 06/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086231	1	06/27/23 21:04	06/29/23 07:35	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2086667	1	06/27/23 21:04	06/29/23 16:59	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2086104	1	06/28/23 17:32	06/29/23 12:48	KAP	Mt. Juliet, TN

20230620-H7-(WW02)@30 L1629042-04 Solid

Collected by Ben Herrman
Collected date/time 06/20/23 09:30
Received date/time 06/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086231	1	06/27/23 21:04	06/29/23 07:59	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2086667	1	06/27/23 21:04	06/29/23 17:18	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2086104	1	06/28/23 17:32	06/29/23 13:28	KAP	Mt. Juliet, TN

20230620-H7-(SW01)@30 L1629042-05 Solid

Collected by Ben Herrman
Collected date/time 06/20/23 09:50
Received date/time 06/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086256	1	06/27/23 21:04	06/29/23 14:33	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2086667	1	06/27/23 21:04	06/29/23 17:37	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2086104	1	06/28/23 17:32	06/29/23 13:41	KAP	Mt. Juliet, TN

CASE NARRATIVE

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



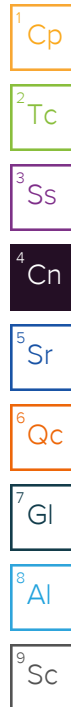
Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 06/30/23 14:01

Project Narrative

Report reissued 7/11 for updated sample ID



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	0.0805	J	0.0217	0.100	1	06/29/2023 06:45	WG2086231
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.1			77.0-120		06/29/2023 06:45	WG2086231

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	06/29/2023 16:21	WG2086667
Toluene	U		0.00130	0.00500	1	06/29/2023 16:21	WG2086667
Ethylbenzene	U		0.000737	0.00250	1	06/29/2023 16:21	WG2086667
Xylenes, Total	U		0.000880	0.00650	1	06/29/2023 16:21	WG2086667
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	06/29/2023 16:21	WG2086667
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	06/29/2023 16:21	WG2086667
(S) <i>Toluene-d8</i>	109			75.0-131		06/29/2023 16:21	WG2086667
(S) <i>4-Bromofluorobenzene</i>	103			67.0-138		06/29/2023 16:21	WG2086667
(S) <i>1,2-Dichloroethane-d4</i>	96.6			70.0-130		06/29/2023 16:21	WG2086667

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	06/29/2023 11:29	WG2086104
C28-C36 Motor Oil Range	1.16	J	0.274	4.00	1	06/29/2023 11:29	WG2086104
(S) <i>o</i> -Terphenyl	48.6			18.0-148		06/29/2023 11:29	WG2086104

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	0.528		0.0217	0.100	1	06/29/2023 07:10	WG2086231
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.0			77.0-120		06/29/2023 07:10	WG2086231

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	0.000675	J	0.000467	0.00100	1	06/29/2023 16:40	WG2086667
Toluene	0.00243	J	0.00130	0.00500	1	06/29/2023 16:40	WG2086667
Ethylbenzene	0.00125	J	0.000737	0.00250	1	06/29/2023 16:40	WG2086667
Xylenes, Total	0.0417		0.000880	0.00650	1	06/29/2023 16:40	WG2086667
1,2,4-Trimethylbenzene	0.00933		0.00158	0.00500	1	06/29/2023 16:40	WG2086667
1,3,5-Trimethylbenzene	0.00958		0.00200	0.00500	1	06/29/2023 16:40	WG2086667
(S) <i>Toluene-d8</i>	110			75.0-131		06/29/2023 16:40	WG2086667
(S) <i>4-Bromofluorobenzene</i>	102			67.0-138		06/29/2023 16:40	WG2086667
(S) <i>1,2-Dichloroethane-d4</i>	94.9			70.0-130		06/29/2023 16:40	WG2086667

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	1.71	J	1.61	4.00	1	06/29/2023 12:35	WG2086104
C28-C36 Motor Oil Range	8.68		0.274	4.00	1	06/29/2023 12:35	WG2086104
(S) <i>o</i> -Terphenyl	55.0			18.0-148		06/29/2023 12:35	WG2086104

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	0.0993	J	0.0217	0.100	1	06/29/2023 07:35	WG2086231
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.4			77.0-120		06/29/2023 07:35	WG2086231

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	06/29/2023 16:59	WG2086667
Toluene	0.00171	J	0.00130	0.00500	1	06/29/2023 16:59	WG2086667
Ethylbenzene	U		0.000737	0.00250	1	06/29/2023 16:59	WG2086667
Xylenes, Total	U		0.000880	0.00650	1	06/29/2023 16:59	WG2086667
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	06/29/2023 16:59	WG2086667
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	06/29/2023 16:59	WG2086667
(S) <i>Toluene-d8</i>	111			75.0-131		06/29/2023 16:59	WG2086667
(S) <i>4-Bromofluorobenzene</i>	103			67.0-138		06/29/2023 16:59	WG2086667
(S) <i>1,2-Dichloroethane-d4</i>	98.4			70.0-130		06/29/2023 16:59	WG2086667

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	2.12	J	1.61	4.00	1	06/29/2023 12:48	WG2086104
C28-C36 Motor Oil Range	9.70		0.274	4.00	1	06/29/2023 12:48	WG2086104
(S) <i>o</i> -Terphenyl	39.3			18.0-148		06/29/2023 12:48	WG2086104

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	0.0791	J	0.0217	0.100	1	06/29/2023 07:59	WG2086231
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.7			77.0-120		06/29/2023 07:59	WG2086231

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	06/29/2023 17:18	WG2086667
Toluene	U		0.00130	0.00500	1	06/29/2023 17:18	WG2086667
Ethylbenzene	U		0.000737	0.00250	1	06/29/2023 17:18	WG2086667
Xylenes, Total	U		0.000880	0.00650	1	06/29/2023 17:18	WG2086667
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	06/29/2023 17:18	WG2086667
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	06/29/2023 17:18	WG2086667
(S) <i>Toluene-d8</i>	110			75.0-131		06/29/2023 17:18	WG2086667
(S) <i>4-Bromofluorobenzene</i>	103			67.0-138		06/29/2023 17:18	WG2086667
(S) <i>1,2-Dichloroethane-d4</i>	97.5			70.0-130		06/29/2023 17:18	WG2086667

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	3.83	J	1.61	4.00	1	06/29/2023 13:28	WG2086104
C28-C36 Motor Oil Range	21.0		0.274	4.00	1	06/29/2023 13:28	WG2086104
(S) <i>o</i> -Terphenyl	34.1			18.0-148		06/29/2023 13:28	WG2086104

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	0.215		0.0217	0.100	1	06/29/2023 14:33	WG2086256
(S) a,a,a-Trifluorotoluene(FID)	95.6			77.0-120		06/29/2023 14:33	WG2086256

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	06/29/2023 17:37	WG2086667
Toluene	0.00228	J	0.00130	0.00500	1	06/29/2023 17:37	WG2086667
Ethylbenzene	U		0.000737	0.00250	1	06/29/2023 17:37	WG2086667
Xylenes, Total	0.00962		0.000880	0.00650	1	06/29/2023 17:37	WG2086667
1,2,4-Trimethylbenzene	0.00405	J	0.00158	0.00500	1	06/29/2023 17:37	WG2086667
1,3,5-Trimethylbenzene	0.0147		0.00200	0.00500	1	06/29/2023 17:37	WG2086667
(S) Toluene-d8	114			75.0-131		06/29/2023 17:37	WG2086667
(S) 4-Bromofluorobenzene	105			67.0-138		06/29/2023 17:37	WG2086667
(S) 1,2-Dichloroethane-d4	96.0			70.0-130		06/29/2023 17:37	WG2086667

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	6.56		1.61	4.00	1	06/29/2023 13:41	WG2086104
C28-C36 Motor Oil Range	21.7		0.274	4.00	1	06/29/2023 13:41	WG2086104
(S) o-Terphenyl	44.0			18.0-148		06/29/2023 13:41	WG2086104

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3942918-3 06/29/23 01:54

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)	98.8			77.0-120

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

(LCS) R3942918-1 06/29/23 00:35 • (LCSD) R3942918-2 06/29/23 01:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.51	5.86	100	107	72.0-127			6.16	20
(S) a,a,a-Trifluorotoluene(FID)				103	105	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3943195-3 06/29/23 13:45

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)	97.6			77.0-120

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

(LCS) R3943195-1 06/29/23 12:31 • (LCSD) R3943195-2 06/29/23 12:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.55	5.51	101	100	72.0-127			0.723	20
(S) a,a,a-Trifluorotoluene(FID)				100	104	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3943422-3 06/29/23 12:54

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	110			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	98.4			70.0-130

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

(LCS) R3943422-1 06/29/23 11:19 • (LCSD) R3943422-2 06/29/23 11:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.121	0.129	96.8	103	70.0-123			6.40	20
Toluene	0.125	0.135	0.140	108	112	75.0-121			3.64	20
Ethylbenzene	0.125	0.128	0.136	102	109	74.0-126			6.06	20
Xylenes, Total	0.375	0.374	0.405	99.7	108	72.0-127			7.96	20
1,2,4-Trimethylbenzene	0.125	0.116	0.124	92.8	99.2	70.0-126			6.67	20
1,3,5-Trimethylbenzene	0.125	0.117	0.128	93.6	102	73.0-127			8.98	20
(S) Toluene-d8				108	107	75.0-131				
(S) 4-Bromofluorobenzene				102	103	67.0-138				
(S) 1,2-Dichloroethane-d4				99.4	102	70.0-130				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3942795-1 06/29/23 07:39

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	70.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3942795-2 06/29/23 07:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	36.9	73.8	50.0-150	
(S) o-Terphenyl			76.6	18.0-148	

L1630200-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1630200-02 06/29/23 09:03 • (MS) R3942795-3 06/29/23 09:16 • (MSD) R3942795-4 06/29/23 09:29

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 %
C10-C28 Diesel Range	50.0	91.6	83.6	87.7	0.000	0.000	1	50.0-150	J6	J6	4.79	20
(S) o-Terphenyl					56.0	48.9		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

GLOSSARY OF TERMS

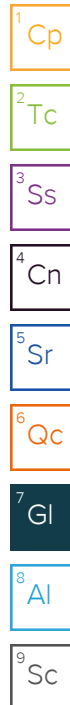
Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



ACCREDITATIONS & LOCATIONS

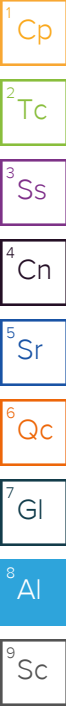
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Caerus Oil & Gas LLC
143 Diamond Avenue
Parachute, CO 81635
970-285-9606

Billing Information:

Same as above

Report to: **bmiddleton@caerusoilandgas.com**

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

Project: **H7-Dumpline**

City/State
Collected: **Mamm Creek, CO**

Phone: _____
Fax: _____

Client Project #

H7


Lab Project #

H7

Collected by (print):
Ben Herrmann

Site/Facility ID #
H7

P.O. # H7

Collected by (signature):

 Immediately
 Packed on Ice N ☐ Y ☒

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

Sample ID

Comp/Grab	Matrix *	Depth
-----------	----------	-------

Date	Time
------	------

[illegible]

Chain of Custody Page 1 of 1

 **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



L #	
L1629042	
C199	
Acctnum:	
Template:	
Prelogin:	
TSR:	
PB:	
Shipped Via:	
Remarks	Sample # (lab only)

* 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: _____ Tracking # 6126 / 6537 3670

☐ UPS ☐ FedEx ☐ Courier _____

Sample Receipt Checklist

COC Seal Present/Intact:	<u>1</u> NP	Y	N
COC Signed/Accurate:		<u>X</u>	N
Bottles arrive intact:		<u>X</u>	N
Correct bottles used:		<u>1</u>	N
Sufficient volume sent:		<u>Y</u>	N
<u>If Applicable</u>			
VOA Zero Headspace:		Y	N
Preservation Correct/Checked:	<u>1</u>	Y	N

Relinquished by: (Signature)


Relinquished by: (Signature)

Relinquished by: (Signature)

Date:	06/20/2023	Time:	12:30
Date:	6/21/23	Time:	1500
Date:		Time:	

Received by: (Signature)	6/21/23 12P5
Received by: (Signature)	
Received for lab by: (Signature)	GRACE BARROW

Trip Blank Received: Yes / No	
HCL / MeOH	
TBR	
Temp: 66.4 °C	Bottles Received:
5.3 + 0 = 5.3	5
Date: 6.23.23	Time: 0900

If preservation required by Login: Date/Time	
Hold:	Condition: NCF / 

Caerus Oil and Gas

Sample Delivery Group: L1629461
Samples Received: 06/24/2023
Project Number: H7
Description:
Site: H7
Report To: Jake J. , Brett M. , Blair R.
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 National

12065 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
20230622-H7-(SW03)@20 L1629461-01	5
20230622-H7-(BASE02)@20 L1629461-02	6
Qc: Quality Control Summary	7
Volatile Organic Compounds (GC) by Method 8015D/GRO	7
Volatile Organic Compounds (GC/MS) by Method 8260B	8
Semi-Volatile Organic Compounds (GC) by Method 8015M	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

20230622-H7-(SW03)@20 L1629461-01 Solid

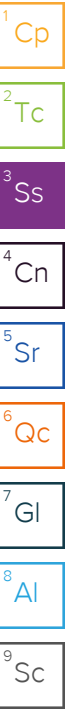
Collected by Ben Herrman
Collected date/time 06/22/23 14:20
Received date/time 06/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086576	1	06/28/23 17:51	07/01/23 16:50	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2088035	1	06/28/23 17:51	07/02/23 20:28	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2087258	1	07/01/23 08:11	07/02/23 10:25	JAS	Mt. Juliet, TN

20230622-H7-(BASE02)@20 L1629461-02 Solid

Collected by Ben Herrman
Collected date/time 06/22/23 14:30
Received date/time 06/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086576	1	06/28/23 17:51	07/01/23 17:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2088035	1	06/28/23 17:51	07/02/23 20:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2087258	2	07/01/23 08:11	07/02/23 11:46	KAP	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



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	0.285		0.0217	0.100	1	07/01/2023 16:50	WG2086576
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.7			77.0-120		07/01/2023 16:50	WG2086576

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	07/02/2023 20:28	WG2088035
Ethylbenzene	0.00213	J	0.000737	0.00250	1	07/02/2023 20:28	WG2088035
Toluene	0.00613		0.00130	0.00500	1	07/02/2023 20:28	WG2088035
1,2,4-Trimethylbenzene	0.00595		0.00158	0.00500	1	07/02/2023 20:28	WG2088035
1,3,5-Trimethylbenzene	0.00503		0.00200	0.00500	1	07/02/2023 20:28	WG2088035
Xylenes, Total	0.0341		0.000880	0.00650	1	07/02/2023 20:28	WG2088035
(S) Toluene-d8	112			75.0-131		07/02/2023 20:28	WG2088035
(S) 4-Bromofluorobenzene	87.9			67.0-138		07/02/2023 20:28	WG2088035
(S) 1,2-Dichloroethane-d4	99.7			70.0-130		07/02/2023 20:28	WG2088035

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	3.92	J	1.61	4.00	1	07/02/2023 10:25	WG2087258
C28-C36 Motor Oil Range	18.7		0.274	4.00	1	07/02/2023 10:25	WG2087258
(S) o-Terphenyl	51.9			18.0-148		07/02/2023 10:25	WG2087258

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	0.259		0.0217	0.100	1	07/01/2023 17:13	WG2086576
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.0			77.0-120		07/01/2023 17:13	WG2086576

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	07/02/2023 20:47	WG2088035
Ethylbenzene	0.00498		0.000737	0.00250	1	07/02/2023 20:47	WG2088035
Toluene	0.0113		0.00130	0.00500	1	07/02/2023 20:47	WG2088035
1,2,4-Trimethylbenzene	0.00880		0.00158	0.00500	1	07/02/2023 20:47	WG2088035
1,3,5-Trimethylbenzene	0.00885		0.00200	0.00500	1	07/02/2023 20:47	WG2088035
Xylenes, Total	0.0758		0.000880	0.00650	1	07/02/2023 20:47	WG2088035
(S) Toluene-d8	113			75.0-131		07/02/2023 20:47	WG2088035
(S) 4-Bromofluorobenzene	87.8			67.0-138		07/02/2023 20:47	WG2088035
(S) 1,2-Dichloroethane-d4	95.0			70.0-130		07/02/2023 20:47	WG2088035

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	10.1		3.22	8.00	2	07/02/2023 11:46	WG2087258
C28-C36 Motor Oil Range	53.0		0.548	8.00	2	07/02/2023 11:46	WG2087258
(S) o-Terphenyl	56.3			18.0-148		07/02/2023 11:46	WG2087258

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3944640-2 07/01/23 11:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0235	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	95.6			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3944640-1 07/01/23 10:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.38	97.8	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3944681-3 07/02/23 15:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00130	0.00500
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) 4-Bromofluorobenzene	87.4			67.0-138
(S) Toluene-d8	114			75.0-131
(S) 1,2-Dichloroethane-d4	93.9			70.0-130

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

(LCS) R3944681-1 07/02/23 14:10 • (LCSD) R3944681-2 07/02/23 14:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Toluene	0.125	0.130	0.129	104	103	75.0-121			0.772	20
Benzene	0.125	0.119	0.115	95.2	92.0	70.0-123			3.42	20
Ethylbenzene	0.125	0.110	0.106	88.0	84.8	74.0-126			3.70	20
1,2,4-Trimethylbenzene	0.125	0.120	0.123	96.0	98.4	70.0-126			2.47	20
1,3,5-Trimethylbenzene	0.125	0.128	0.130	102	104	73.0-127			1.55	20
Xylenes, Total	0.375	0.331	0.329	88.3	87.7	72.0-127			0.606	20
(S) 4-Bromofluorobenzene				93.4	91.9	67.0-138				
(S) Toluene-d8				104	100	75.0-131				
(S) 1,2-Dichloroethane-d4				101	101	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3943866-1 07/02/23 07:06

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	67.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3943866-2 07/02/23 07:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	28.3	56.6	50.0-150	
(S) o-Terphenyl			68.0	18.0-148	

L1629461-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1629461-01 07/02/23 10:25 • (MS) R3943866-3 07/02/23 10:39 • (MSD) R3943866-4 07/02/23 10:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	47.8	3.92	33.0	29.2	60.8	52.3	1	50.0-150			12.2	20
(S) o-Terphenyl					64.4	59.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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.

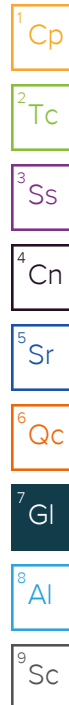
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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



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.



Hold:	Condition: NCF / (OK)
-------	--------------------------

L1629461

<u>Tracking Numbers</u>	<u>Temperature</u>
5882 7564 6541	NSA6 2.4027.4
6426 8303 2468	NSA6 1.71081.7

Caerus Oil and Gas

Sample Delivery Group: L1629661
Samples Received: 06/23/2023
Project Number: H7
Description: H7-DumpLine
Site: H7
Report To: Jake J. , Brett M. , Blair R.
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 National

12065 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
20230621-H7-(SW02)@20 L1629661-01	5
Qc: Quality Control Summary	6
Volatile Organic Compounds (GC) by Method 8015D/GRO	6
Volatile Organic Compounds (GC/MS) by Method 8260B	7
Semi-Volatile Organic Compounds (GC) by Method 8015M	8
Gl: Glossary of Terms	9
Al: Accreditations & Locations	10
Sc: Sample Chain of Custody	11

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

SAMPLE SUMMARY

20230621-H7-(SW02)@20 L1629661-01 Solid

Collected by
Ben Herrmann

Collected date/time
06/21/23 15:10

Received date/time
06/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2086576	1	06/28/23 09:42	07/01/23 14:23	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2087747	1	06/28/23 09:42	06/30/23 18:11	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2088566	1	06/28/23 09:42	07/03/23 17:52	BAM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2086406	1	06/29/23 16:23	06/30/23 12:19	JDG	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

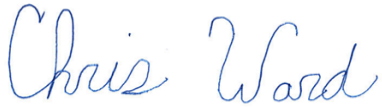
⁷Gl

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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	0.162	B	0.0217	0.100	1	07/01/2023 14:23	WG2086576
(S) a,a,a-Trifluorotoluene(FID)	92.5			77.0-120		07/01/2023 14:23	WG2086576

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	06/30/2023 18:11	WG2087747
Ethylbenzene	U		0.000737	0.00250	1	06/30/2023 18:11	WG2087747
Toluene	0.00567		0.00130	0.00500	1	06/30/2023 18:11	WG2087747
1,2,4-Trimethylbenzene	0.00535		0.00158	0.00500	1	06/30/2023 18:11	WG2087747
1,3,5-Trimethylbenzene	0.00389	J	0.00200	0.00500	1	06/30/2023 18:11	WG2087747
Xylenes, Total	0.0330		0.000880	0.00650	1	06/30/2023 18:11	WG2087747
(S) Toluene-d8	113			75.0-131		06/30/2023 18:11	WG2087747
(S) Toluene-d8	102			75.0-131		07/03/2023 17:52	WG2088566
(S) 4-Bromofluorobenzene	99.8			67.0-138		06/30/2023 18:11	WG2087747
(S) 4-Bromofluorobenzene	103			67.0-138		07/03/2023 17:52	WG2088566
(S) 1,2-Dichloroethane-d4	89.0			70.0-130		06/30/2023 18:11	WG2087747
(S) 1,2-Dichloroethane-d4	105			70.0-130		07/03/2023 17:52	WG2088566

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	9.20		1.61	4.00	1	06/30/2023 12:19	WG2086406
C28-C36 Motor Oil Range	45.7		0.274	4.00	1	06/30/2023 12:19	WG2086406
(S) o-Terphenyl	46.3			18.0-148		06/30/2023 12:19	WG2086406

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3944640-2 07/01/23 11:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0235	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	95.6			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3944640-1 07/01/23 10:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.38	97.8	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3943979-3 06/30/23 13:50

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	112			75.0-131
(S) 4-Bromofluorobenzene	97.2			67.0-138
(S) 1,2-Dichloroethane-d4	89.1			70.0-130

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

(LCS) R3943979-1 06/30/23 12:15 • (LCSD) R3943979-2 06/30/23 12:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.127	0.122	102	97.6	70.0-123			4.02	20
Toluene	0.125	0.135	0.133	108	106	75.0-121			1.49	20
Ethylbenzene	0.125	0.139	0.142	111	114	74.0-126			2.14	20
Xylenes, Total	0.375	0.396	0.404	106	108	72.0-127			2.00	20
1,2,4-Trimethylbenzene	0.125	0.114	0.115	91.2	92.0	70.0-126			0.873	20
1,3,5-Trimethylbenzene	0.125	0.113	0.114	90.4	91.2	73.0-127			0.881	20
(S) Toluene-d8				111	110	75.0-131				
(S) 4-Bromofluorobenzene				98.4	102	67.0-138				
(S) 1,2-Dichloroethane-d4				94.0	93.3	70.0-130				

L1628467-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1628467-03 06/30/23 18:49 • (MS) R3943979-4 07/01/23 00:30 • (MSD) R3943979-5 07/01/23 00:49

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.120	U	0.0651	0.0904	54.3	75.3	1	10.0-149			32.5	37
Toluene	0.120	0.00262	0.0739	0.103	61.6	85.8	1	10.0-156			32.9	38
Ethylbenzene	0.120	U	0.0742	0.103	61.8	85.8	1	10.0-160			32.5	38
Xylenes, Total	0.360	U	0.211	0.300	58.6	83.3	1	10.0-160			34.8	38
1,2,4-Trimethylbenzene	0.120	U	0.0624	0.0862	52.0	71.8	1	10.0-160			32.0	36
1,3,5-Trimethylbenzene	0.120	U	0.0614	0.0862	51.2	71.8	1	10.0-160			33.6	38
(S) Toluene-d8					111	113		75.0-131				
(S) 4-Bromofluorobenzene					99.4	102		67.0-138				
(S) 1,2-Dichloroethane-d4					87.5	85.9		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3943387-1 06/30/23 08:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.289	⬇	0.274	4.00
(S) o-Terphenyl	83.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3943387-2 06/30/23 09:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	29.7	59.4	50.0-150	
(S) o-Terphenyl			62.8	18.0-148	

L1629265-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1629265-01 06/30/23 13:22 • (MS) R3943387-3 06/30/23 13:34 • (MSD) R3943387-4 06/30/23 13:47

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	5.93	45.1	44.6	78.3	77.3	1	50.0-150			1.11	20
(S) o-Terphenyl					71.5	69.8		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

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

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

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



Caerus Oil & Gas LLC
143 Diamond Avenue
Parachute, CO 81635
970-285-9606

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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

Report to:
bmiddleton@caerusoilandgas.com

Email To:
bmiddleton@caerusoilandgas.com

Project
Description: H7-Dumpline

City/State
Collected: Mamm Creek, CO

Phone:
Fax:
Client Project #
H7

Lab Project #
H7

Collected by (print):
Ben Herrmann

Site/Facility ID #
H7

P.O. #
H7

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Date Results Needed

Standard TAT

No.
of
Cntrs

Sample ID Comp/Grab Matrix * Depth Date Time

TPH- GRO, DRO, ORO

BTEX

1,2,4-trimethylbenzene

1,3,5-trimethylbenzene

20230621-H7-(SW02)@20 Grab SS 20 06/21/2023 15:10 1

X X X X

Remarks Sample # (lab only)

-01

* 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 #

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes No

HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

Hold:

Condition:
NCF OK

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

Caerus Oil and Gas

Sample Delivery Group: L1633312
Samples Received: 07/08/2023
Project Number: H7
Description: H7-Dumpline
Site: H7
Report To: Jake Janicek
143 Diamond Avenue
Parachute, CO 81635

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

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 National

12065 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
20230701-H7-(STOCK01) L1633312-01	5
20230701-H7-(STOCK02) L1633312-02	6
20230701-H7-(STOCK03) L1633312-03	7
20230701-H7-(STOCK04) L1633312-04	8
Qc: Quality Control Summary	9
Volatile Organic Compounds (GC) by Method 8015D/GRO	9
Volatile Organic Compounds (GC/MS) by Method 8260B	12
Semi-Volatile Organic Compounds (GC) by Method 8015M	15
Gl: Glossary of Terms	17
Al: Accreditations & Locations	18
Sc: Sample Chain of Custody	19

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

SAMPLE SUMMARY

20230701-H7-(STOCK01) L1633312-01 Solid

Collected by
Matthew Yousif

Collected date/time
07/01/23 09:35

Received date/time
07/08/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2096223	250	07/11/23 17:59	07/17/23 15:10	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2093055	1	07/11/23 17:59	07/12/23 03:27	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2094307	8	07/11/23 17:59	07/13/23 15:05	BAM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2093944	1	07/13/23 15:42	07/13/23 22:54	JAS	Mt. Juliet, TN

20230701-H7-(STOCK02) L1633312-02 Solid

Collected by
Matthew Yousif

Collected date/time
07/01/23 10:20

Received date/time
07/08/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2093778	100	07/11/23 17:59	07/13/23 19:45	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2093055	8	07/11/23 17:59	07/12/23 05:21	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2093980	5	07/14/23 06:01	07/14/23 16:23	JAS	Mt. Juliet, TN

20230701-H7-(STOCK03) L1633312-03 Solid

Collected by
Matthew Yousif

Collected date/time
07/01/23 11:05

Received date/time
07/08/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2093778	100	07/11/23 17:59	07/13/23 20:10	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2093055	8	07/11/23 17:59	07/12/23 05:40	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2093980	1	07/14/23 06:01	07/14/23 15:17	JAS	Mt. Juliet, TN

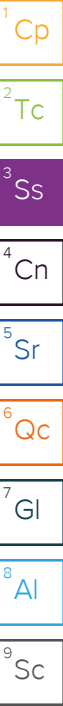
20230701-H7-(STOCK04) L1633312-04 Solid

Collected by
Matthew Yousif

Collected date/time
07/01/23 12:20

Received date/time
07/08/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2094671	1	07/11/23 17:59	07/14/23 00:55	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2093055	1	07/11/23 17:59	07/12/23 03:46	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2093944	1	07/13/23 15:42	07/14/23 00:12	JAS	Mt. Juliet, TN



CASE NARRATIVE

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



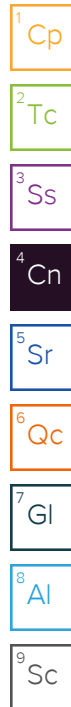
Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 07/18/23 09:50

Project Narrative

Report reissued 7/18 to correct project number



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	262	Q	5.43	25.0	250	07/17/2023 15:10	WG2096223
(S) a,a,a-Trifluorotoluene(FID)	95.0			77.0-120		07/17/2023 15:10	WG2096223

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	07/12/2023 03:27	WG2093055
Toluene	U		0.00130	0.00500	1	07/12/2023 03:27	WG2093055
Ethylbenzene	0.000767	J	0.000737	0.00250	1	07/12/2023 03:27	WG2093055
Xylenes, Total	2.19		0.000880	0.00650	1	07/12/2023 03:27	WG2093055
1,2,4-Trimethylbenzene	2.31		0.00158	0.00500	1	07/12/2023 03:27	WG2093055
1,3,5-Trimethylbenzene	4.89		0.0160	0.0400	8	07/13/2023 15:05	WG2094307
(S) Toluene-d8	96.3			75.0-131		07/12/2023 03:27	WG2093055
(S) Toluene-d8	114			75.0-131		07/13/2023 15:05	WG2094307
(S) 4-Bromofluorobenzene	103			67.0-138		07/12/2023 03:27	WG2093055
(S) 4-Bromofluorobenzene	106			67.0-138		07/13/2023 15:05	WG2094307
(S) 1,2-Dichloroethane-d4	89.4			70.0-130		07/12/2023 03:27	WG2093055
(S) 1,2-Dichloroethane-d4	94.8			70.0-130		07/13/2023 15:05	WG2094307

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	45.7		1.61	4.00	1	07/13/2023 22:54	WG2093944
C28-C36 Motor Oil Range	2.18	B J	0.274	4.00	1	07/13/2023 22:54	WG2093944
(S) o-Terphenyl	29.9			18.0-148		07/13/2023 22:54	WG2093944

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	169		2.17	10.0	100	07/13/2023 19:45	WG2093778
(S) a,a,a-Trifluorotoluene(FID)	90.8			77.0-120		07/13/2023 19:45	WG2093778

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		0.00374	0.00800	8	07/12/2023 05:21	WG2093055
Toluene	U		0.0104	0.0400	8	07/12/2023 05:21	WG2093055
Ethylbenzene	U		0.00590	0.0200	8	07/12/2023 05:21	WG2093055
Xylenes, Total	0.534		0.00704	0.0520	8	07/12/2023 05:21	WG2093055
1,2,4-Trimethylbenzene	0.595		0.0126	0.0400	8	07/12/2023 05:21	WG2093055
1,3,5-Trimethylbenzene	2.33		0.0160	0.0400	8	07/12/2023 05:21	WG2093055
(S) Toluene-d8	107			75.0-131		07/12/2023 05:21	WG2093055
(S) 4-Bromofluorobenzene	102			67.0-138		07/12/2023 05:21	WG2093055
(S) 1,2-Dichloroethane-d4	101			70.0-130		07/12/2023 05:21	WG2093055

Sample Narrative:

L1633312-02 WG2093055: Non-target compounds too high to run at a lower dilution.

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	320		8.05	20.0	5	07/14/2023 16:23	WG2093980
C28-C36 Motor Oil Range	70.0		1.37	20.0	5	07/14/2023 16:23	WG2093980
(S) o-Terphenyl	44.8			18.0-148		07/14/2023 16:23	WG2093980

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	157		2.17	10.0	100	07/13/2023 20:10	WG2093778
(S) a,a,a-Trifluorotoluene(FID)	90.9			77.0-120		07/13/2023 20:10	WG2093778

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		0.00374	0.00800	8	07/12/2023 05:40	WG2093055
Toluene	U		0.0104	0.0400	8	07/12/2023 05:40	WG2093055
Ethylbenzene	U		0.00590	0.0200	8	07/12/2023 05:40	WG2093055
Xylenes, Total	0.952		0.00704	0.0520	8	07/12/2023 05:40	WG2093055
1,2,4-Trimethylbenzene	0.806		0.0126	0.0400	8	07/12/2023 05:40	WG2093055
1,3,5-Trimethylbenzene	0.842		0.0160	0.0400	8	07/12/2023 05:40	WG2093055
(S) Toluene-d8	102			75.0-131		07/12/2023 05:40	WG2093055
(S) 4-Bromofluorobenzene	103			67.0-138		07/12/2023 05:40	WG2093055
(S) 1,2-Dichloroethane-d4	97.7			70.0-130		07/12/2023 05:40	WG2093055

Sample Narrative:

L1633312-03 WG2093055: Non-target compounds too high to run at a lower dilution.

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	162		1.61	4.00	1	07/14/2023 15:17	WG2093980
C28-C36 Motor Oil Range	31.6		0.274	4.00	1	07/14/2023 15:17	WG2093980
(S) o-Terphenyl	61.3			18.0-148		07/14/2023 15:17	WG2093980

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	2.06		0.0217	0.100	1	07/14/2023 00:55	WG2094671
(S) a,a,a-Trifluorotoluene(FID)	94.5			77.0-120		07/14/2023 00:55	WG2094671

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	0.000965	J	0.000467	0.00100	1	07/12/2023 03:46	WG2093055
Toluene	0.0229		0.00130	0.00500	1	07/12/2023 03:46	WG2093055
Ethylbenzene	0.0267		0.000737	0.00250	1	07/12/2023 03:46	WG2093055
Xylenes, Total	0.875		0.000880	0.00650	1	07/12/2023 03:46	WG2093055
1,2,4-Trimethylbenzene	0.435		0.00158	0.00500	1	07/12/2023 03:46	WG2093055
1,3,5-Trimethylbenzene	0.480		0.00200	0.00500	1	07/12/2023 03:46	WG2093055
(S) Toluene-d8	108			75.0-131		07/12/2023 03:46	WG2093055
(S) 4-Bromofluorobenzene	102			67.0-138		07/12/2023 03:46	WG2093055
(S) 1,2-Dichloroethane-d4	94.2			70.0-130		07/12/2023 03:46	WG2093055

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	11.3		1.61	4.00	1	07/14/2023 00:12	WG2093944
C28-C36 Motor Oil Range	13.6		0.274	4.00	1	07/14/2023 00:12	WG2093944
(S) o-Terphenyl	39.8			18.0-148		07/14/2023 00:12	WG2093944

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3948335-3 07/13/23 03:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0428	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	91.0			77.0-120

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

(LCS) R3948335-1 07/13/23 01:23 • (LCSD) R3948335-2 07/13/23 01:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.41	6.29	117	114	72.0-127			1.89	20
(S) a,a,a-Trifluorotoluene(FID)				96.1	96.9	77.0-120				

L1633246-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1633246-01 07/13/23 18:29 • (MS) R3948335-4 07/13/23 21:00 • (MSD) R3948335-5 07/13/23 21:25

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	140	0.894	113	118	92.6	96.8	25	10.0-151			4.33	28
(S) a,a,a-Trifluorotoluene(FID)					94.0	94.5		77.0-120				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3948821-2 07/14/23 00:04

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)	97.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3948821-1 07/13/23 21:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.35	97.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3949468-2 07/17/23 14:38

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)	94.3			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3949468-1 07/17/23 13:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.30	115	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			104	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3948196-3 07/11/23 20:57

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	105			75.0-131
(S) 4-Bromofluorobenzene	104			67.0-138
(S) 1,2-Dichloroethane-d4	91.6			70.0-130

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

(LCS) R3948196-1 07/11/23 19:22 • (LCSD) R3948196-2 07/11/23 19:41

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	0.125	0.130	100	104	70.0-123			3.92	20
Toluene	0.125	0.133	0.132	106	106	75.0-121			0.755	20
Ethylbenzene	0.125	0.121	0.124	96.8	99.2	74.0-126			2.45	20
Xylenes, Total	0.375	0.359	0.371	95.7	98.9	72.0-127			3.29	20
1,2,4-Trimethylbenzene	0.125	0.111	0.115	88.8	92.0	70.0-126			3.54	20
1,3,5-Trimethylbenzene	0.125	0.109	0.114	87.2	91.2	73.0-127			4.48	20
(S) Toluene-d8				105	103	75.0-131				
(S) 4-Bromofluorobenzene				103	103	67.0-138				
(S) 1,2-Dichloroethane-d4				98.3	99.7	70.0-130				

L1633312-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1633312-02 07/12/23 05:21 • (MS) R3948196-4 07/12/23 05:59 • (MSD) R3948196-5 07/12/23 06:18

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 %
Benzene	0.990	U	0.939	0.940	94.8	94.9	8	10.0-149			0.106	37
Toluene	0.990	U	0.970	0.955	98.0	96.5	8	10.0-156			1.56	38
Ethylbenzene	0.990	U	0.938	0.902	94.7	91.1	8	10.0-160			3.91	38
Xylenes, Total	2.97	0.534	3.29	3.27	92.8	92.1	8	10.0-160			0.610	38
1,2,4-Trimethylbenzene	0.990	0.595	1.54	1.51	95.5	92.4	8	10.0-160			1.97	36
1,3,5-Trimethylbenzene	0.990	2.33	3.46	3.39	114	107	8	10.0-160			2.04	38
(S) Toluene-d8					102	101		75.0-131				
(S) 4-Bromofluorobenzene					105	107		67.0-138				
(S) 1,2-Dichloroethane-d4					98.1	98.3		70.0-130				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1633312-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1633312-02 07/12/23 05:21 • (MS) R3948196-4 07/12/23 05:59 • (MSD) R3948196-5 07/12/23 06:18

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%

Sample Narrative:

OS: Non-target compounds too high to run at a lower dilution.

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3948655-2 07/13/23 10:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	111			75.0-131
(S) 4-Bromofluorobenzene	90.3			67.0-138
(S) 1,2-Dichloroethane-d4	93.2			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3948655-1 07/13/23 09:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,3,5-Trimethylbenzene	0.125	0.130	104	73.0-127	
(S) Toluene-d8			104	75.0-131	
(S) 4-Bromofluorobenzene			96.0	67.0-138	
(S) 1,2-Dichloroethane-d4			100	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3948503-1 07/13/23 20:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.286	⌵	0.274	4.00
(S) o-Terphenyl	61.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3948503-2 07/13/23 20:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.7	65.4	50.0-150	
(S) o-Terphenyl			62.6	18.0-148	

L1633252-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1633252-02 07/13/23 22:14 • (MS) R3948503-3 07/13/23 22:27 • (MSD) R3948503-4 07/13/23 22:41

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	U	35.1	38.0	70.2	76.0	1	50.0-150			7.93	20
(S) o-Terphenyl					61.7	65.0		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3948860-1 07/14/23 12:39

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	81.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3948860-2 07/14/23 12:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	38.5	77.0	50.0-150	
(S) o-Terphenyl			66.8	18.0-148	

L1633518-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1633518-01 07/14/23 14:37 • (MS) R3948860-3 07/14/23 14:51 • (MSD) R3948860-4 07/14/23 15:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.7	6.87	35.3	41.0	57.2	68.3	1	50.0-150			14.9	20
(S) o-Terphenyl					31.9	36.9		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

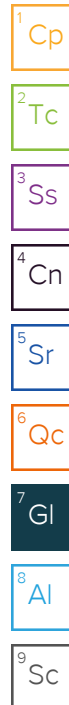
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.



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.



