



VIA ELECTRONIC MAIL –

October 19, 2023

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

**Subject: Decommissioning Field Activities
L9 –Hill 9-14
Mamm Creek Field
Garfield County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Piceance LLC (Caerus), completed field soil screening, and confirmation and site-specific background soil sampling associated with the decommissioning of production well Hill 9-14 [American Petroleum Institute (API) Number (#) 045-09356] and associated infrastructure (flowlines) to the HILL-67S92W9NWSW (Location ID: 334844), also known as the L9 pad location (Site). Field investigation activities were completed to confirm if impacts associated with the production well and associated infrastructure were present prior to decommissioning of the infrastructure. All associated field decommissioning work was completed per the Colorado Oil and Gas Conservation Commission (COGCC) Rule 913.c.(9): *Decommissioning of Oil and Gas Facilities*. This report of work completed (ROWC) documents all field investigative work completed during the second quarter of 2023 and at the Site to date under Remediation Project Number (RPN) 28568. The Site is located in the Caerus' Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

SOIL SAMPLING ACTIVITIES – L9 – HILL 9-14

On April 13, 2023, a WSP geologist conducted field soil screening, and confirmation and site-specific background soil sampling activities associated with the decommissioning of production well Hill 9-14 (API# 045-09356) and associated production equipment. Western Slope Oilfield Services, LLC of Rifle, Colorado was contracted by Caerus to provide hydro-vacuum services to assist with the confirmation soil sampling activities at the Site. Three potholes were advanced using the hydro-vacuum truck (hydro-vac). The first pothole location [20230413-L9-(FC-WH-HILL-9-14)@6] was advanced to 6 feet below ground surface (bgs) immediately adjacent to the wellhead. A sandstone shelf was encountered at 6 feet bgs and the pothole was unable to be advanced further vertically. The second pothole [20230413-L9-(FC-FL1)@6] was advanced behind the separator production unit at the “dogleg” flowline junction to a depth of 6 feet bgs. The third pothole [20230413-L9-(FC-FL2)@5] was advanced between the flowline riser and the separator. Using a hand auger, investigative soil samples immediately adjacent to the production well were collected and screened at each 2-foot interval from 2-feet bgs to the pothole terminus at 6 feet bgs. The flowline riser and “dogleg” flowline junction investigative grab soil samples were collected using the hand auger directly beneath the 90-degree bends in the flowlines and screened at depths of 5 feet and 6 feet bgs, respectively. 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 handheld photoionization detector (PID) to monitor for the presence or absence of volatile organic compounds (VOCs). The PID head space screening results are summarized in the table below.

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Field Soil Screening Results – April 13, 2023

Sample ID	PID (ppm)	Notes	Submitted for Analysis
20230413-L9-(FC-WH-HILL-9-14)@2	0.1	No Odor, No Staining	No
20230413-L9-(FC-WH-HILL-9-14)@4	2.6	Hydrocarbon Odor, Staining	No
20230413-L9-(FC-WH-HILL-9-14)@6	2.8	Hydrocarbon Odor, Staining	Full Table 915-1
20230413-L9-(FC-FL1)@6	0.1	No Odor, No Staining	Full Table 915-1
20230413-L9-(FC-FL2)@5	0.1	No Odor, No Staining	Full Table 915-1

Key:

PID – photoionization detector

ppm – parts per million

In addition, four site-specific background soil samples were collected from two hand auger locations to the east and west of the pad location from comparable, nearby, non-impacted, native soil per COGCC Rule 915.e.(2). D. The site-specific background sample depths ranged from 0.5-1 feet bgs to 2-2.5 feet bgs.

All soil samples were placed in clean laboratory-prepared containers and submitted to Pace Analytical of Mount Juliet, Tennessee for analysis. The three investigative confirmation soil samples 20230413-L9-(FC-WH-HILL-9-14)@6, 20230413-L9-(FC-FL1)@6, and 20230413-L9-(FC-FL2)@5 were submitted for all constituents listed in COGCC Table 915-1. The site-specific background soil samples were submitted for the analysis of COGCC Table 915-1 metals, sodium adsorption ratio (SAR), electrical conductivity (EC), pH, and boron (water soluble). All soil analytical results will be evaluated under the Protection of Groundwater Soil Screening Level Concentrations (PGSSLCs). The investigative confirmation soil sample locations and site-specific background soil sample locations from the investigative activities completed on April 13, 2023 are depicted in the attached Figure 2. A photographic log of the investigative activities conducted at the Site on April 13, 2023 is included in Enclosure A.

FIELD SOIL SCREENING ACTIVITIES – L9 – HILL 9-14

On May 18, 2023, a WSP geologist returned to conduct final soil field screening activities associated with decommissioned production flowline dogleg (dumpline/sales line) located behind the separator and the flowline into the separator associated with planned decommissioning of production well Hill 9-14 to confirm the presence or absence of hydrocarbon impacts. Using a spade shovel, all sidewalls and base of each excavation footprint immediately beneath the above mentioned abandoned infrastructure were characterized using visual and olfactory observations, and field screened for volatile organic compounds using a PID. Inside the abandoned production flowline dogleg (dumpline/sales line) excavation, two soil samples were field screened from the excavation base immediately beneath the former dumpline and sales line at total depths of 5.5 feet bgs. Inside the abandoned flowline excavation footprint which connected the separator to the well, one soil sample was field screened from the excavation base directly beneath the exposed flowline (90-degree bend) at a total depth of 5.5 feet bgs. Excavation sidewalls associated with the decommissioned production equipment were field screened in all cardinal directions at total depths ranging from 5 feet to 5.5 feet bgs. To ensure representative soil samples were collected, prior to field screening, at least six inches of soil was removed from each sampling surface. Based on field screening values, visual and olfactory observations, no impacts were observed beneath or within the excavated abandonment footprints associated with the production well infrastructure (dumpline/sales line and flowline) locations. The field soil screening locations are depicted in the attached Figure 3.



Field Soil Screening Results – May 18, 2023

Sample ID	PID (ppm)	Notes	Submitted for Analysis
20230518-L9-(WW)@5.5	1.2	No Odor, No Staining	No
20230518-L9-(NW)@5.5	0.5	No Odor, No Staining	No
20230518-L9-(EW)@5	0.1	No Odor, No Staining	No
20230518-L9-(SW)@5.5	0.3	No Odor, No Staining	No
20230518-L9-(FC-DL)@5.5	8.4	No Odor, No Staining	No
20230518-L9-(FC-SL)@5.5	10.0	No Odor, No Staining	No
20230518-L9-(WW)@5.5	0.0	No Odor, No Staining	No
20230518-L9-(NW)@5	0.1	No Odor, No Staining	No
20230518-L9-(EW)@5.5	0.1	No Odor, No Staining	No
20230518-L9-(SW)@5.5	0.0	No Odor, No Staining	No
20230518-L9-(FC-FL)@5.5	0.1	No Odor, No Staining	No

Key:

PID – photoionization detector

ppm – parts per million

A photographic log of the decommissioned production flowline dogleg (dumpline/sales line) located behind the separator and the flowline into the separator of the activities conducted at the Site on May 18, 2023, is included in Enclosure A.

SOIL SAMPLING ACTIVITIES – L9 – HILL 9-14

On July 20, 2023, WSP personnel conducted field soil screening and confirmation soil sampling activities associated with the decommissioning of production well Hill 9-14 (API# 045-09356) to confirm if hydrocarbon impacts were present post decommissioning of the well. Using a spade shovel five confirmation soil samples were collected from the base and sidewalls in each cardinal direction of the wellhead. One soil sample was collected and field screened from the base of the former wellhead at a total depth of 5 feet bgs and four confirmation soil samples were field screened and collected from the excavation walls in each cardinal direction at a total depths of 5 feet bgs. To ensure representative soil samples were collected, prior to sample collection and field soil screening, at least six inches of soil was removed from the sampling surface. 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 as previously described. In addition, one five-point composite soil sample 20230720-L9-(STOCK) was collected from the excavated soil removed from around the areas of decommissioned production wells Hill 9-12A and Hill 9-14. The PID head space screening results are summarized in the table below.

Field Soil Screening Results – July 20, 2023

Sample ID	PID (ppm)	Notes	Submitted for Analysis
20230720-L9-(BASE-HILL 9-14)@5	3.9	No Odor, No Staining	Full Table 915-1
20230720-L9-(SW-HILL 9-14)@5	3.7	No Odor, No Staining	Full Table 915-1
20230720-L9-(EW-HILL 9-14)@5	3.4	No Odor, No Staining	Full Table 915-1
20230720-L9-(NW-HILL 9-14)@5	4.2	No Odor, No Staining	Full Table 915-1
20230720-L9-(WW-HILL 9-14)@5	8.3	No Odor, No Staining	Full Table 915-1
20230720-L9-(STOCK)	3.0	No Odor, No Staining	Full Table 915-1

Key:

PID – photoionization detector

ppm – parts per million

All confirmation soil samples were placed in clean laboratory-prepared containers and submitted to Pace for laboratory analysis of COGCC Table 915-1 analytes. All soil analytical results will be evaluated under the PGSSLCs. A photographic log of the decommissioned wellhead field sampling activities conducted at the Site on July 20, 2023, is included in Enclosure A. A site map depicting the decommissioned wellhead and stockpile confirmation soil sample locations is include as Figure 4.



ANALYTICAL RESULTS – L9 – HILL 9-14

Laboratory analytical results of the three investigative confirmation soil samples collected at the Site on April 13, 2023, indicate exceedances of the COGCC Table 915-1 Cleanup Concentrations (CCs) and PGSSLCs. The documented exceedances for each confirmation sample are summarized in the table below.

Summary of Confirmation Soil Analytical Exceedances – April 13, 2023

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Protection of Groundwater Soil Screening Level Concentrations	Confirmation Soil Sample Concentration
20230413-L9-(FC-WH-HILL-9-14)@6	Arsenic	mg/kg	0.29 (M)	3.40
	Barium	mg/kg	82 (M)	16,200
	1-methylnaphthalene	mg/kg	0.006 (R)	0.0128
	2-methylnaphthalene	mg/kg	0.019 (R)	0.0328
	Naphthalene	mg/kg	0.0038 (R)	0.00754
20230413-L9-(FC-FL1)@6	Arsenic	mg/kg	0.29 (M)	5.31
	Barium	mg/kg	82 (M)	194
	Selenium	mg/kg	0.26 (M)	0.440
	pH	SU	6 – 8.3	9.02
20230413-L9-(FC-FL2)@5	Arsenic	mg/kg	0.29 (M)	6.10
	Barium	mg/kg	82 (M)	328
	Selenium	mg/kg	0.26 (M)	0.666

Key:

mg/kg - milligrams per kilogram

BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level

M - maximum containment level

R – risk based

SU – standard unit

COGCC - Colorado Oil and Gas Conservation Commission

Laboratory analytical results of the four site-specific background soil samples collected in proximity to the Site on April 13, 2023, indicate exceedances of the COGCC Table 915-1 PGSSLCs. The documented exceedances for each site-specific background soil sample are summarized in the table below.

Summary of Site-Specific Background Soil Analytical Exceedances – April 13, 2023

Background Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Protection of Groundwater Soil Screening Level Concentrations	Confirmation Soil Sample Concentration
20230413-L9-(BG1)@0.5-1	Arsenic	mg/kg	0.29 (M)	5.31
	Barium	mg/kg	82 (M)	138
	Selenium	mg/kg	0.26 (M)	0.620
20230413-L9-(BG1)@1.5-2	Arsenic	mg/kg	0.29 (M)	7.96
	Barium	mg/kg	82 (M)	119
	Selenium	mg/kg	0.26 (M)	0.539
20230413-L9-(BG2)@1-1.5	Arsenic	mg/kg	0.29 (M)	6.08
	Barium	mg/kg	82 (M)	124
	Selenium	mg/kg	0.026 (M)	0.574
20230413-L9-(BG2)@2-2.5	Arsenic	mg/kg	0.29 (M)	4.17
	Barium	mg/kg	82 (M)	85.8
	Selenium	mg/kg	0.26 (M)	0.555

Key:

mg/kg - milligrams per kilogram

BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level

COGCC - Colorado Oil and Gas Conservation Commission

M - maximum containment level



Laboratory analytical results of the five investigative confirmation soil samples collected at the Site on July 10, 2023, indicate exceedances of the COGCC Table 915-1 Cleanup Concentrations (CCs) and PGSSLCs for. The documented exceedances for each confirmation sample are summarized in the table below.

Summary of Confirmation Soil Analytical Exceedances – July 20, 2023

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Protection of Groundwater Soil Screening Level Concentrations	Confirmation Soil Sample Concentration
20230720-L9-(BASE-HILL 9-14)@5	Arsenic	mg/kg	0.29 (M)	4.39
	Barium	mg/kg	82 (M)	1,430
	Cadmium	mg/kg	0.38 (M)	0.381
	Selenium	mg/kg	0.26 (M)	0.475
20230720-L9-(SW-HILL 9-14)@5	Arsenic	mg/kg	0.29 (M)	5.50
	Barium	mg/kg	82 (M)	1,580
	Selenium	mg/kg	0.26 (M)	0.448
20230720-L9-(EW-HILL 9-14)@5	Arsenic	mg/kg	0.29 (M)	5.92
	Barium	mg/kg	82 (M)	416
	Selenium	mg/kg	0.26 (M)	0.433
20230720-L9-(NW-HILL 9-14)@5	Arsenic	mg/kg	0.29 (M)	5.63
	Barium	mg/kg	82 (M)	2,930
	Selenium	mg/kg	0.26 (M)	0.477
	TPH	mg/kg	500	1,555.0307
20230720-L9-(WW-HILL 9-14)@5	Arsenic	mg/kg	0.29 (M)	5.39
	Barium	mg/kg	82 (M)	1,050
	Selenium	mg/kg	0.26 (M)	0.599
20230720-L9-(STOCK)	Arsenic	mg/kg	0.29 (M)	4.45
	Barium	mg/kg	82 (M)	6,330
	Cadmium	mg/kg	0.38 (M)	0.467
	Selenium	mg/kg	0.26 (M)	0.462
	1-methylnaphthalene	mg/kg	0.006 (R)	0.0101
	2-methylnaphthalene	mg/kg	0.019 (R)	0.0249
	Naphthalene	mg/kg	0.0038 (R)	0.00680

Key:

mg/kg - milligrams per kilogram

BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level

M - maximum containment level

R - risk based

COGCC - Colorado Oil and Gas Conservation Commission

TPH - total petroleum hydrocarbons

All other analytes were either below the laboratory method detection limit (MDL) or within the COGCC Table 915-1 PGSSLCs. However, it should be noted that the laboratory MDL for chromium (VI) is 0.255 mg/kg, which is greater than the COGCC Table 915-1 PGSSLC of 0.00067 mg/kg. The laboratory analytical reports are included in Enclosure B and the results are summarized in Table 1. The soil analytical exceedances of the wellhead confirmation soil samples collected on July 20, 2023 are shown on Figure 5.

CONCLUSIONS – L9 – HILL 9-14

Based on the analytical data provided herein from the investigative decommissioning sampling activities completed to date, there are remaining COGCC Table 915-1 exceedances of arsenic, barium, cadmium, selenium, total petroleum hydrocarbon (TPH), 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene associated with decommissioning of production well Hill 9-14 (API# 045-09356), remaining COGCC Table 915-1 exceedances of arsenic, barium, selenium associated with the decommissioned flowline dogleg (dumpline/sales line) located behind the separator [20230413-L9-(FC-FL1)@6], and remaining COGCC Table 915-1 exceedances of arsenic, barium,



selenium, and pH associated with the associated the decommissioned flowline (into the separator) [20230413-L9-(FC-FL2)@5].

WSP recommends that Caerus continue with source removal of soil from the production well Hill 9-14 (API# 045-09356) when scheduling allows. Source removal will include the removal of lateral impacts from the north sidewall of the current wellhead excavation extent. Prior to any additional field work, WSP recommends that Caerus request the COGCC Director per Rule 915 e.(2)C. to sample under a reduced analytical suite for barium, cadmium, TPH, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene.

Reference Supplemental Form 27 Document Number 403401949 for request to the Director for relief of contaminants of concern which include arsenic and pH per COGCC Rule 915 e.(2)C. (Figure 6).

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 black ink, appearing to be 'D. Held'.

Dustin Held
Sr. Consultant, Environmental Geologist

A handwritten signature in black ink, appearing to be 'Parker Coit'.

Parker Coit, P.G.
Lead Consultant, Geologist

Encl.

FIGURES

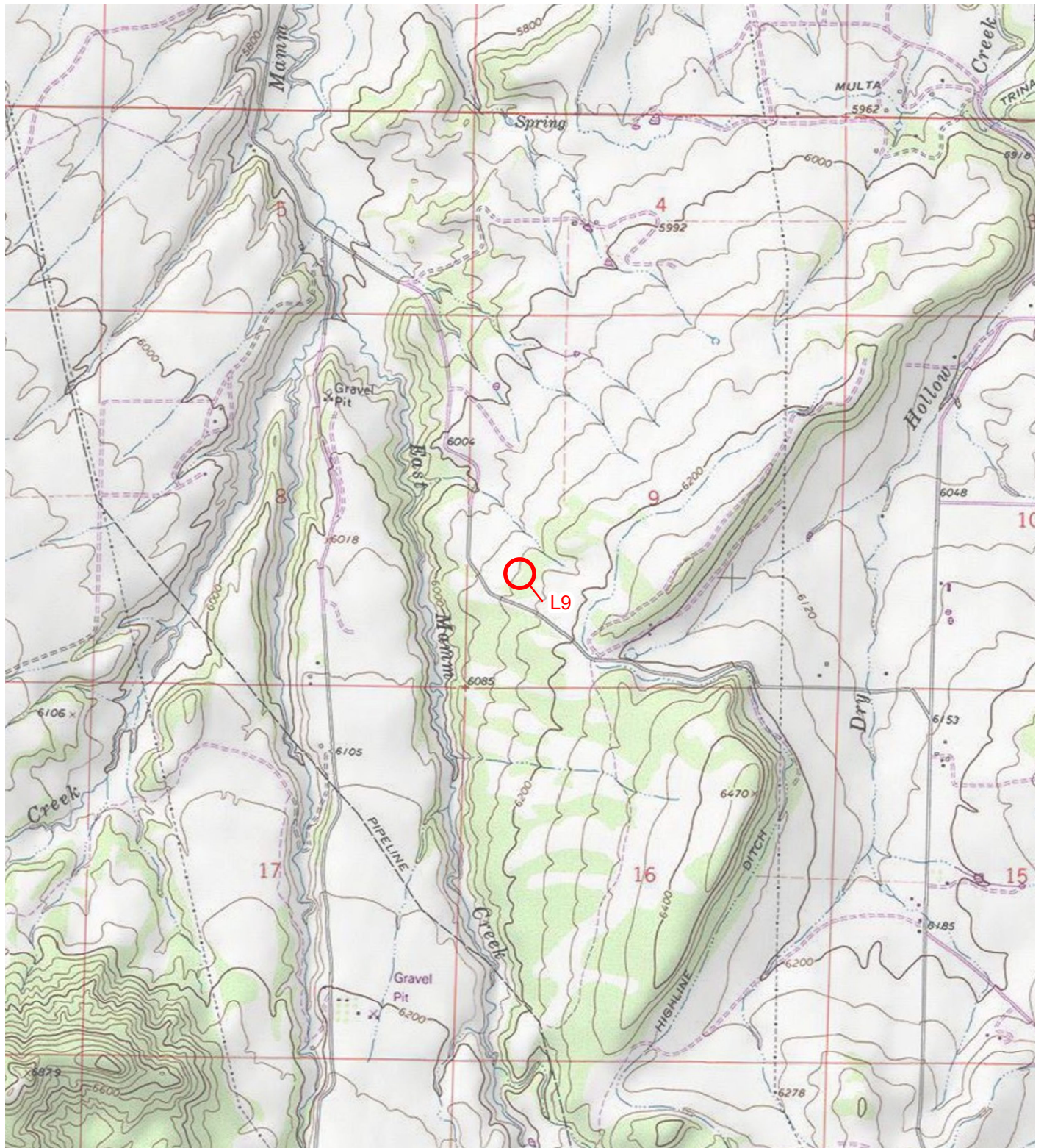


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

0 2,000 4,000
Feet



FIGURE 1
SITE LOCATION MAP
L9
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC





IMAGE COURTESY OF GOOGLE MAPS 2020

LEGEND

- SOIL SAMPLE
- ▲ BACKGROUND SOIL SAMPLE

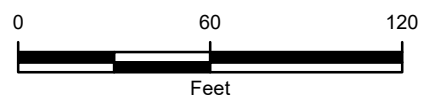


FIGURE 2
SAMPLE LOCATION MAP
L9 FC-WH-HILL-9-14
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC





IMAGE COURTESY OF GOOGLE MAPS 2020

LEGEND

- FIELD SCREENING SOIL SAMPLE
- ▭ EXCAVATION EXTENT

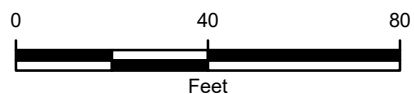


FIGURE 3
 FIELD SCREENING SAMPLE LOCATION MAP
 L9
 NWSW SEC 9-T7S-R92W
 GARFIELD COUNTY, COLORADO
 CAERUS PICEANCE LLC



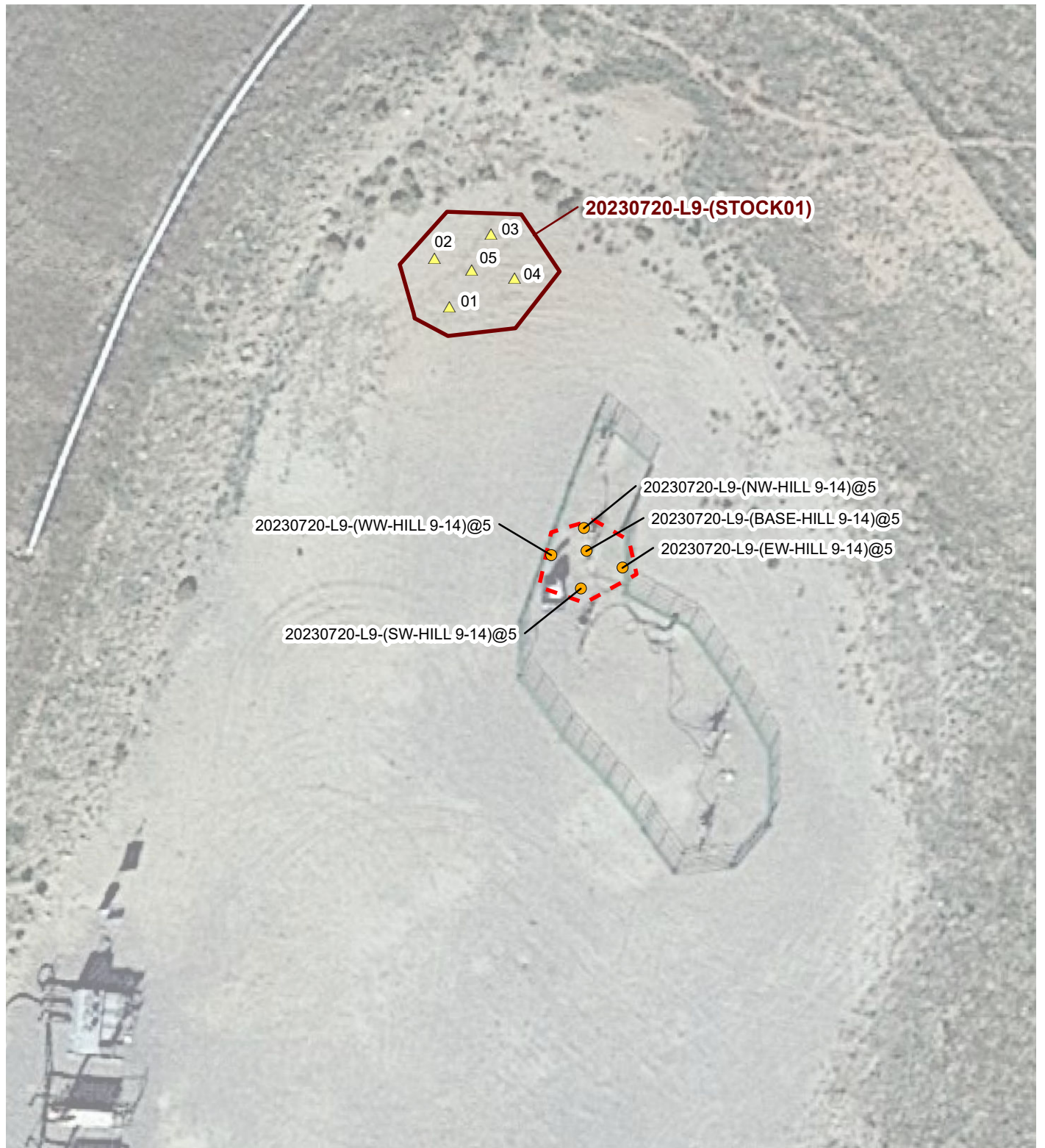


IMAGE COURTESY OF GOOGLE EARTH (2020)

LEGEND

- SOIL SAMPLE
- ▲ ALIQUOT SAMPLE
- EXCAVATION EXTENT (7/20/2023)
- SPOIL PILE (7/20/2023)

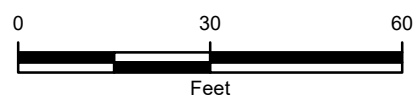
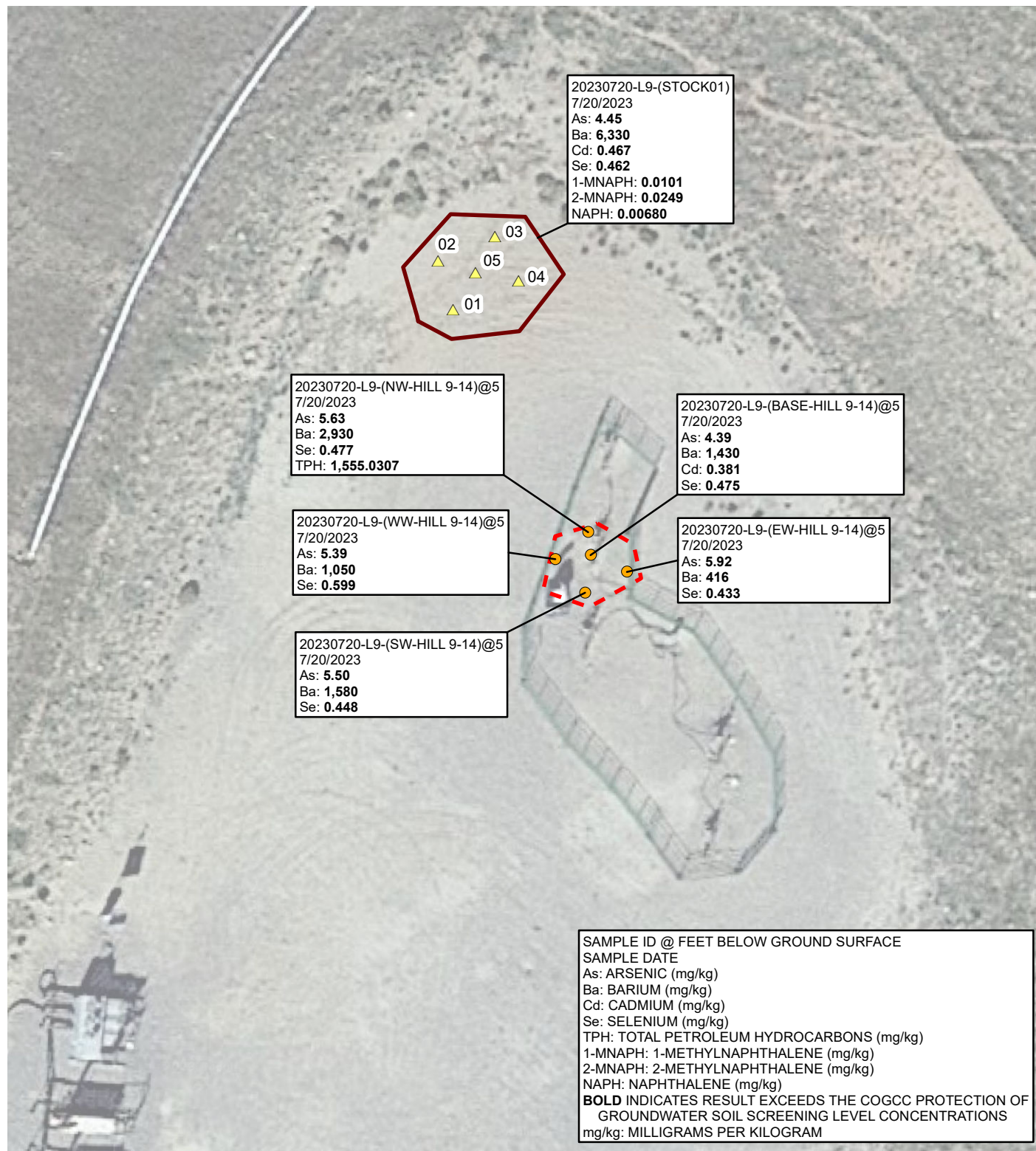


FIGURE 4
EXCAVATION SITE MAP
 L9 FC-WH-HILL-9-14
 NWSW SEC 9-T7S-R92W
 GARFIELD COUNTY, COLORADO
 CAERUS PICEANCE LLC





LEGEND

- SOIL SAMPLE
- ▲ ALIQUOT SAMPLE
- EXCAVATION EXTENT (7/20/2023)
- SPOIL PILE (7/20/2023)

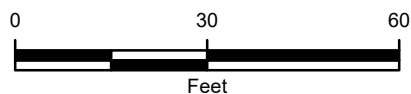


FIGURE 5
SOIL ANALYTICAL EXCEEDENCES MAP
L9 FC-WH-HILL-9-14
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC



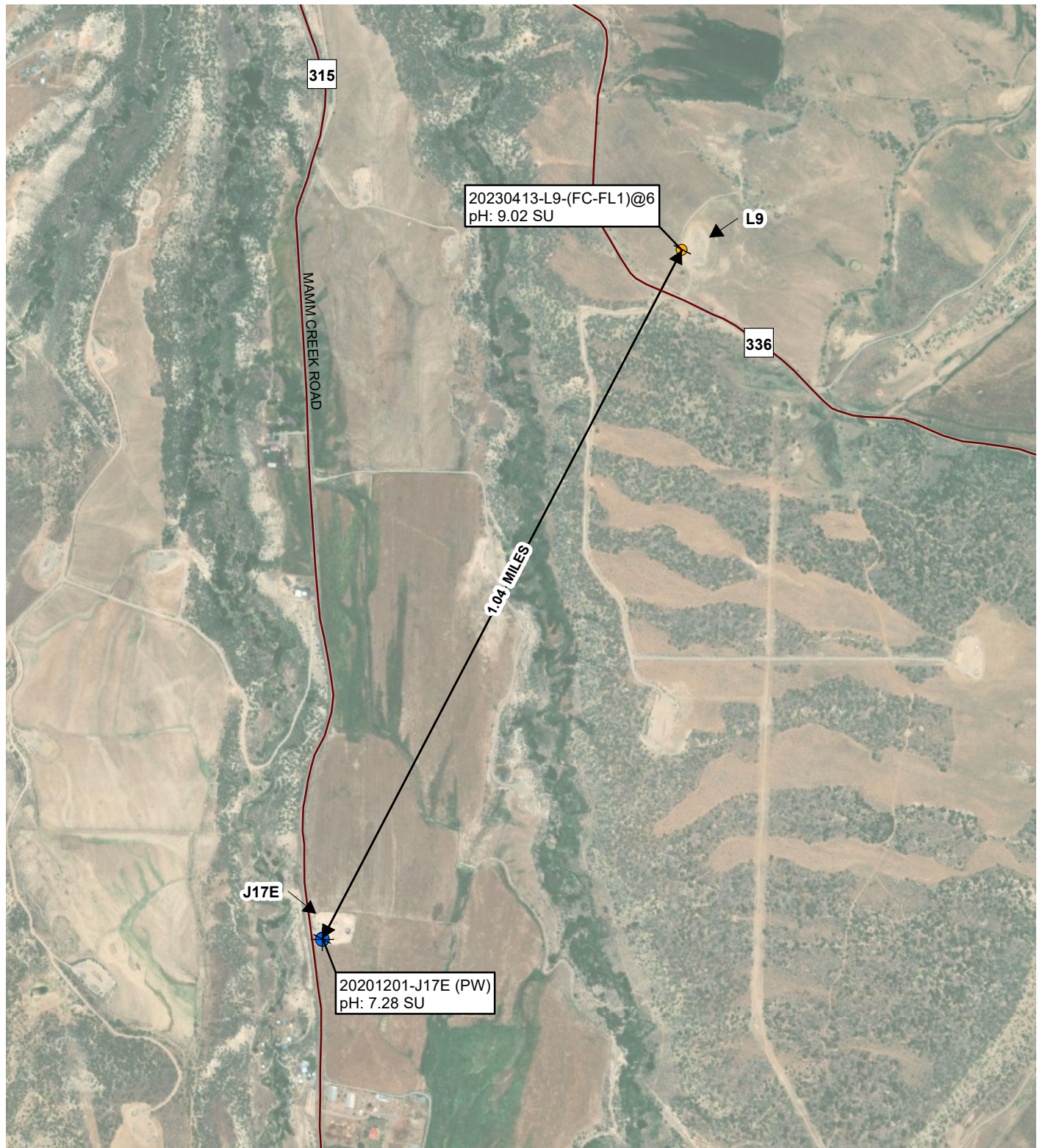


IMAGE COURTESY OF GOOGLE MAPS 2020

LEGEND

- SOIL SAMPLE
- ⊕ PRODUCED WATER SAMPLE
- ROAD

SU: STANDARD UNIT

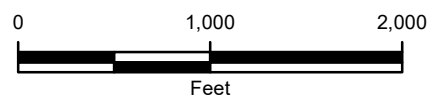


FIGURE 6
GEOGRAPHIC PROXIMITY MAP
L9 FC-WH-HILL-9-14
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC

wsp

TABLES

TABLE 1

SOIL ANALYTICAL RESULTS
L9 HILL 9-14 WELLHEAD DECOMMISSIONING
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS			
				20230413-L9-(FC-WH-HILL-9 -14)@6	20230413-L9-(FC-FL1)@6	20230413-L9-(FC-FL2)@5
Sample Date				4/13/2023	4/13/2023	4/13/2023
Sample Depth (feet)				6	6	5
Sample Type				Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	3.40	5.31	6.10
Barium	15,000	82 (M)	mg/kg	16,200	194	328
Boron	2	2	mg/l	0.546	0.540	0.413
Cadmium	71	0.38 (M)	mg/kg	0.251	0.142	0.239
Chromium (VI)	0.3	0.00067 (R)	mg/kg	<0.255	<0.255	<0.255
Copper	3,100	46 (M)	mg/kg	7.70	7.21	10.1
Lead	400	14 (M)	mg/kg	12.9	8.22	10.4
Nickel	1,500	26 (R)	mg/kg	3.52	9.83	13.2
Selenium	390	0.26 (M)	mg/kg	0.212	0.440	0.666
Silver	390	0.8 (R)	mg/kg	<0.0865	<0.0865	<0.0865
Zinc	23,000	370 (R)	mg/kg	42.5	26	37.2
EC	<4	<4	mmhos/cm	0.345	0.190	0.204
pH	6 - 8.3	6 - 8.3	SU	7.91	9.02	8.22
SAR	<6	<6	unitless	0.826	1.29	0.516
TPH-GRO			mg/kg	0.0267	0.0405	<0.0217
TPH-DRO			mg/kg	23.00	<1.61	<1.61
TPH-ORO			mg/kg	14.6	0.354	0.463
TPH	500	500	mg/kg	37.63	0.395	0.463
Benzene	1.2	0.0026 (M)	mg/kg	<0.000467	<0.000467	<0.000467
Toluene	490	0.69 (M)	mg/kg	<0.00130	<0.00130	<0.00130
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.000737	<0.000737	<0.000737
Total Xylenes	58	9.9 (M)	mg/kg	<0.000880	<0.000880	<0.000880
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00158	<0.00158	<0.00158
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	0.00678	<0.00200	<0.00200
Acenaphthene	360	0.55 (R)	mg/kg	<0.00209	<0.00209	<0.00209
Anthracene	1,800	5.8 (R)	mg/kg	<0.00230	<0.00230	<0.00230
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	<0.00173	<0.00173	<0.00173
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	<0.00153	<0.00153	<0.00153
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	<0.00215	<0.00215	<0.00215
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	<0.00179	<0.00179	<0.00179
Chrysene	110	9 (R)	mg/kg	<0.00232	<0.00232	<0.00232
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	<0.00172	<0.00172	<0.00172
Fluoranthene	240	8.9 (R)	mg/kg	<0.00227	<0.00227	<0.00227
Fluorene	240	0.54 (R)	mg/kg	0.00428	<0.00205	<0.00205
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	<0.00181	<0.00181	<0.00181
1-methylnaphthalene	18	0.006 (R)	mg/kg	0.0128	<0.00449	<0.00449
2-methylnaphthalene	24	0.019 (R)	mg/kg	0.0328	<0.00427	<0.00427
Naphthalene	2	0.0038 (R)	mg/kg	0.00754	<0.00408	<0.00408
Pyrene	180	1.3 (R)	mg/kg	0.00200	<0.00200	<0.00200

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening level concentration
Highlight - indicates that sample MDL exceeds COGCC protection of groundwater soil screening level concentration
COGCC - Colorado Oil and Gas Conservation Commissior
EC- electrical conductivity
mg/l - milligrams per lite
mg/kg - milligrams per kilogran
mmhos/cm - millimhos per centimete
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
MDL - method detection limit
MCL - maximum contaminant level (M)
M- MCL based

TABLE 1

SOIL ANALYTICAL RESULTS

L9 HILL 9-14 WELLHEAD DECOMMISSIONING

GARFIELD COUNTY, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	CONFIRMATION SOIL SAMPLE					20230720-L9-(STOCK)
			20230720-L9-(BASE-HILL 9-14)@5	20230720-L9-(SW-HILL 9-14)@5	20230720-L9-(EW-HILL 9-14)@5	20230720-L9-(NW-HILL 9-14)@5	20230720-L9-(WW-HILL 9-14)@5	
Sample Date			7/20/2023	7/20/2023	7/20/2023	7/20/2023	7/20/2023	7/20/2023
Sample Depth (feet)			5	5	5	5	5	--
Sample Type			Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	4.39	5.50	5.92	5.63	5.39	4.45
Barium	15,000	82 (M)	1,430	1,580	416	2,930	1,050	6,330
Boron	2	2	0.396	0.284	0.267	0.198	0.266	0.263
Cadmium	71	0.38 (M)	0.381	0.170	0.192	0.182	0.273	0.467
Chromium (VI)	0.3	0.00067 (R)	<0.255	<0.255	<0.255	<0.255	<0.255	<0.255
Copper	3,100	46 (M)	8.81	9.02	9.51	8.59	10.7	12.1
Lead	400	14 (M)	8.87	9.40	10.6	10.2	13.4	11.4
Nickel	1,500	26 (R)	7.67	8.10	8.08	7.82	8.82	8.22
Selenium	390	0.26 (M)	0.475	0.448	0.433	0.477	0.599	0.462
Silver	390	0.8 (R)	<0.0865	<0.0865	<0.0865	<0.0865	<0.0865	<0.0865
Zinc	23,000	370 (R)	32.0	33.8	35.5	33.3	45.0	43.6
EC	<4	<4	0.793	0.295	0.254	0.448	0.235	0.314
pH	6 - 8.3	6 - 8.3	7.74	8.12	8.18	8.00	8.04	8.02
SAR	<6	<6	2.26	0.862	0.823	0.596	0.816	0.774
TPH-GRO			0.0328	0.0707	0.0346	0.0307	0.0466	0.0354
TPH-DRO			41.7	4.62	9.56	545	59.8	81.6
TPH-ORO			107	8.43	22.3	1,010	101	125
TPH	500	500	148.7328	13.1207	31.8946	1,555.0307	160.8466	206.6354
Benzene	1.2	0.0026 (M)	<0.000467	<0.000467	<0.000467	<0.000467	<0.000467	<0.000467
Toluene	490	0.69 (M)	<0.00130	<0.00130	<0.00130	<0.00130	<0.00130	<0.00130
Ethylbenzene	5.8	0.78 (M)	<0.000737	<0.000737	<0.000737	<0.000737	<0.000737	<0.000737
Total Xylenes	58	9.9 (M)	<0.000880	<0.000880	<0.000880	<0.000880	<0.000880	<0.000880
1,2,4-trimethylbenzene	30	0.0081 (R)	<0.00158	<0.00158	<0.00158	<0.00158	<0.00158	<0.00158
1,3,5-trimethylbenzene	27	0.0087 (R)	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Acenaphthene	360	0.55 (R)	<0.00209	<0.00209	<0.00209	<0.00209	<0.00209	<0.00209
Anthracene	1,800	5.8 (R)	<0.00230	<0.00230	<0.00230	<0.00230	<0.00230	<0.00230
Benzo(A)anthracene	1.1	0.011 (R)	<0.00173	<0.00173	<0.00173	<0.00173	<0.00173	<0.00173
Benzo(B)fluoranthene	1.1	0.3 (R)	<0.00153	<0.00153	<0.00153	<0.00153	<0.00153	<0.00153
Benzo(K)fluoranthene	11	2.9 (R)	<0.00215	<0.00215	<0.00215	<0.00215	<0.00215	<0.000215
Benzo(A)pyrene	0.11	0.24 (M)	<0.00179	<0.00179	<0.00179	<0.00179	<0.00179	<0.00179
Chrysene	110	9 (R)	<0.00232	<0.00232	<0.00232	<0.00232	<0.00232	<0.00232
Dibenzo(A,H)anthracene	0.11	0.096 (R)	<0.00172	<0.00172	<0.00172	<0.00172	<0.00172	<0.00172
Fluoranthene	240	8.9 (R)	<0.00227	<0.00227	<0.00227	<0.00227	<0.00227	<0.0227
Fluorene	240	0.54 (R)	<0.00205	<0.00205	<0.00205	<0.00205	0.00227	<0.00205
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	<0.00181	<0.00181	<0.00181	<0.00181	<0.00181	<0.00181
1-methylnaphthalene	18	0.006 (R)	<0.00449	<0.00449	<0.00449	<0.00449	0.00456	0.0101
2-methylnaphthalene	24	0.019 (R)	0.00686	<0.00427	<0.00427	0.00512	0.00765	0.0249
Naphthalene	2	0.0038 (R)	<0.00408	<0.00408	<0.00408	<0.00408	<0.00408	0.00680
Pyrene	180	1.3 (R)	0.00227	<0.00200	<0.00200	0.00400	0.00331	0.00336

NOTES:

BOLD - indicates result exceeds the COGCC protection of groundwater soil screening level concentration:

Highlight - indicates that sample MDL exceeds COGCC protection of groundwater soil screening level concentration

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimete

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

MDL - method detection limit

MCL - maximum contaminant level (M)

M- MCL based

TABLE 1

SOIL ANALYTICAL RESULTS
L9 HILL 9-14 WELLHEAD DECOMMISSIONING
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	BACKGROUND SOIL SAMPLE			
			20230413-L9-(BG1)@0.5-1	20230413-L9-(BG1)@1.5-2	20230413-L9-(BG2)@1-1.5	20230413-L9-(BG2)@2-2.5
Sample Date			4/13/2023	4/13/2023	4/13/2023	4/13/2023
Sample Depth (feet)			0.5-1	1.5-2	1-1.5	2-2.5
Sample Type			Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	5.31	7.96	6.08	4.17
Barium	15,000	82 (M)	138	119	124	85.8
Boron	2	2	0.404	0.324	0.406	0.283
Cadmium	71	0.38 (M)	0.232	0.235	0.166	0.183
Chromium (VI)	0.3	0.00067 (R)	<0.255	<0.255	<0.255	<0.255
Copper	3,100	46 (M)	10.7	7.90	9.00	11.1
Lead	400	14 (M)	11.4	11.0	10.6	11.7
Nickel	1,500	26 (R)	11.4	9.01	9.30	9.91
Selenium	390	0.26 (M)	0.620	0.539	0.574	0.555
Silver	390	0.8 (R)	<0.0865	<0.0865	<0.0865	<0.0865
Zinc	23,000	370 (R)	45.3	35.6	35.0	41.9
EC	<4	<4	0.198	0.195	0.143	0.108
pH	6 - 8.3	6 - 8.3	8.05	8.05	8.22	8.22
SAR	<6	<6	0.237	0.212	0.161	0.358
TPH-GRO			NA	NA	NA	NA
TPH-DRO			NA	NA	NA	NA
TPH-ORO			NA	NA	NA	NA
TPH	500	500	NA	NA	NA	NA
Benzene	1.2	0.0026 (M)	NA	NA	NA	NA
Toluene	490	0.69 (M)	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	NA	NA	NA	NA
1,2,4-trimethylbenzene	30	0.0081 (R)	NA	NA	NA	NA
1,3,5-trimethylbenzene	27	0.0087 (R)	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	NA	NA	NA	NA
Anthracene	1,800	5.8 (R)	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	NA	NA	NA	NA
Chrysene	110	9 (R)	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	NA	NA	NA	NA
Fluorene	240	0.54 (R)	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	NA	NA	NA	NA
Pyrene	180	1.3 (R)	NA	NA	NA	NA

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening level concentration:
Highlight - indicates that sample MDL exceeds COGCC protection of groundwater soil screening level concentrati
COGCC - Colorado Oil and Gas Conservation Commissioner
EC- electrical conductivity
mg/l - milligrams per lite
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SAR - sodium adsorption ratio
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TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO
NA - analyte not analyzed
ND - analyte not detected
R - risk based
MDL - method detection limit
MCL - maximum contaminant level (M)
M- MCL based

ENCLOSURE A – SOIL SCREENING PHOTOLOG



PHOTOGRAPHIC LOG

Caerus Piceance LLC

L9

31406292.006

Photo No.

1

Date

April 13, 2023

Wellhead (L9 Hill 9-14) Overview;
Facing east



Photo No.

2

Date

April 13, 2023

Flowline riser (FL2) Overview;
Facing southwest



Photo No.

3

Date

April 13, 2023

Flowline Dogleg (FL1) Overview;
Facing south





PHOTOGRAPHIC LOG

Caerus Piceance LLC

L9

31406292.006

Photo No.

Date

4

April 13, 2023

Flowline Dogleg (FL1) Overview;
Facing south



Photo No.

Date

5

April 13, 2023

Wellhead (L9 Hill 9-14) Pothole,
shaley sandstone bedrock
encountered at approximately 6.5
feet bgs, Flowline 90 at
approximately 6 feet bgs



Photo No.

Date

6

April 13, 2023

Sample 20230413-L9-(FC-WH-
HILL-9-14)@6



PHOTOGRAPHIC LOG

Caerus Piceance LLC	L9	31406292.006
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Photo No.	Date	
7	April 13, 2023	
Flowline 1 Pothole, Collected from beneath flowline 90 at approximately 6 feet bgs		

Photo No.	Date	
8	April 13, 2023	
Sample 20230413-L9-(FC-FL1)@6		

Photo No.	Date	
9	April 13, 2023	
Flowline 2 Pothole, Collected from the two flowlines at approximately 5 feet bgs		

PHOTOGRAPHIC LOG

Caerus Piceance LLC	L9	31406292.006
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Photo No.	Date	
10	April 13, 2023	
Sample 20230413-L9-(FC-FL2)@5		
		

Photo No.	Date	
11	April 13, 2023	
Sample 20230413-L9-(BG1)@0.5-1		
		

Photo No.	Date	
12	April 13, 2023	
Sample 20230413-L9-(BG1)@1.5-2		
		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	L9	31406292.006

Photo No.	Date	
13	April 13, 2023	
Sample 20230413-L9-(BG2)@1-1.5		

Photo No.	Date	
14	April 13, 2023	
Sample 20230413-L9-(BG2)@2-2.5		

PHOTOGRAPHIC LOG

Caerus Piceance LLC	L9	31406292.006
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Photo No.	Date	
1	May 18, 2023	
Flowline Dogleg Excavation Footprint (Dumpline and Sales Line) Overview; view south		

Photo No.	Date	
2	May 18, 2023	
Dogleg Sales Line Field Screening Sample: 20230518-L9-(FC-SL)@5.5		

Photo No.	Date	
3	May 18, 2023	
Dogleg Dumpline Field Screening Sample: 20230518-L9-(FC-DL)@5.5		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	L9	31406292.006

Photo No.	Date	
4	May 18, 2023	
South Wall Field Screening Sample: 20230518-L9-(SW)@5.5; view south		

Photo No.	Date	
5	May 18, 2023	
West Wall Field Screening Sample: 20230518-L9-(WW)@5.5; view west		

Photo No.	Date	
6	May 18, 2023	
East Wall Field Screening Sample: 20230518-L9-(EW)@5; view east		

PHOTOGRAPHIC LOG

Caerus Piceance LLC	L9	31406292.006
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Photo No.	Date	
7	May 18, 2023	
North Wall Field Screening Sample: 20230518-L9-(NW)@5.5; view east		


Photo No.	Date	
8	April 13, 2023	
Flowline Excavation Overview; view southwest		

Photo No.	Date	
9	May 18, 2023	
Flowline Field Screening Sample: 20230518-L9-(FC-FL)@5.5		

PHOTOGRAPHIC LOG

Caerus Piceance LLC

L9

31406292.006

Photo No.	Date	
10	May 18, 2023	
Flowline Field Screening Sample: 20230518-L9-(WW)@5.5		

Photo No.	Date	
11	May 18, 2023	
Flowline Field Screening Sample: 20230518-L9-(NW)@5.5		

Photo No.	Date	
12	May 18, 2023	
Flowline Field Screening Sample: 20230518-L9-(SW)@5.5		



PHOTOGRAPHIC LOG		
Caerus Piceance LLC	L9	31406292.006

Photo No.	Date	
13	May 18, 2023	
Flowline Field Screening Sample: 20230518-L9-(EW)@5.5		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	L9 – HILL9-14 WELL	31406292.006

Photo No.	Date	
1	July 20, 2023	
Stockpile from excavation of Hill 9-12A and Hill 9-14 productions wells; View north		


Photo No.	Date	
2	July 20, 2023	
Fenced off excavation extent; View east		

Photo No.	Date	
3	July 20, 2023	
Hill 9-14 BASE soil sample; View east		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	L9 – HILL9-14 WELL	31406292.006

Photo No.	Date	
4	July 20, 2023	
Hill 9-14 SW soil sample; View south		

Photo No.	Date	
5	July 20, 2023	
Hill 9-14 EW soil sample; View east		

Photo No.	Date	
6	July 20, 2023	
Hill 9-14 NW soil sample;		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	L9 – HILL9-14 WELL	31406292.006


Photo No.	Date	
7	July 20, 2023	
Hill 9-14 WW soil sample; View west		

Photo No.	Date	
8	July 20, 2023	
Hill 9-14 excavation extent; View southeast		

ENCLOSURE B – LABORATORY ANALYTICAL RESULTS

April 24, 2023

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1605741
Samples Received: 04/15/2023
Project Number: L9
Description: L9 Facility Deconmissioning
Site: L9
Report To: Brett M. , Jake J. , 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

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

SAMPLE SUMMARY

20230413-L9-(FC-WH-HILL-9-12A)@6 L1605741-01 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 10:30

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:32	04/21/23 15:32	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2043469	1	04/18/23 00:35	04/19/23 14:25	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2040784	1	04/19/23 09:00	04/19/23 11:36	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:43	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	2000	04/18/23 15:16	04/19/23 14:25	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:27	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2045914	25	04/18/23 09:43	04/20/23 20:42	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2044884	1	04/18/23 09:43	04/19/23 19:51	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2043613	10	04/18/23 17:13	04/19/23 09:05	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2044200	1	04/18/23 20:53	04/19/23 02:03	AGW	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

20230413-L9-(FC-WH-HILL-9-14)@6 L1605741-02 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 11:20

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:35	04/21/23 15:35	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2043469	1	04/18/23 00:35	04/19/23 14:30	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2040784	1	04/19/23 09:00	04/19/23 11:36	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:46	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	2000	04/18/23 15:16	04/19/23 14:29	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:30	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2045371	1	04/18/23 09:43	04/20/23 18:07	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2043923	1	04/18/23 09:43	04/18/23 15:29	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2043613	1	04/18/23 17:13	04/19/23 01:03	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2044200	1	04/18/23 20:53	04/19/23 02:23	AGW	Mt. Juliet, TN

20230413-L9-(FC-FL1)@6 L1605741-03 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 12:25

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:38	04/21/23 15:38	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2043469	1	04/18/23 00:35	04/19/23 14:35	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2040784	1	04/19/23 09:00	04/19/23 11:36	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:48	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	20	04/18/23 15:16	04/19/23 14:32	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:33	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2044634	1	04/18/23 09:43	04/19/23 18:56	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2043923	1	04/18/23 09:43	04/18/23 15:48	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2043613	1	04/18/23 17:13	04/19/23 00:38	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2044200	1	04/18/23 20:53	04/19/23 02:43	AGW	Mt. Juliet, TN

20230413-L9-(FC-FL2)@5 L1605741-04 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 14:00

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:41	04/21/23 15:41	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2043469	1	04/18/23 00:35	04/19/23 14:46	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2044560	1	04/20/23 11:30	04/20/23 14:07	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:51	ABL	Mt. Juliet, TN

SAMPLE SUMMARY

20230413-L9-(FC-FL2)@5 L1605741-04 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 14:00

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:43	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	50	04/18/23 15:16	04/19/23 14:35	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2044249	1	04/18/23 09:43	04/19/23 05:13	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2043923	1	04/18/23 09:43	04/18/23 16:07	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2043613	1	04/18/23 17:13	04/19/23 00:50	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2044200	1	04/18/23 20:53	04/19/23 03:02	AGW	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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.734		1	04/21/2023 15:32	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/19/2023 14:25	WG2043469

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.90	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:
L1605741-01 WG2043721: 7.9 at 19.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	211		10.0	1	04/19/2023 11:36	WG2040784

Sample Narrative:
L1605741-01 WG2040784: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.492		0.0167	0.200	1	04/20/2023 00:43	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.48		0.100	1.00	5	04/19/2023 13:27	WG2043643
Barium	13300		60.8	1000	2000	04/19/2023 14:25	WG2043643
Cadmium	0.308	J	0.0855	1.00	5	04/19/2023 13:27	WG2043643
Copper	9.68		0.132	5.00	5	04/19/2023 13:27	WG2043643
Lead	10.4		0.0990	2.00	5	04/19/2023 13:27	WG2043643
Nickel	6.27		0.197	2.50	5	04/19/2023 13:27	WG2043643
Selenium	0.527	J	0.180	2.50	5	04/19/2023 13:27	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:27	WG2043643
Zinc	52.7		0.740	25.0	5	04/19/2023 13:27	WG2043643

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	3.47	B	0.543	2.50	25	04/20/2023 20:42	WG2045914
(S) a,a,a-Trifluorotoluene(FID)	93.5			77.0-120		04/20/2023 20:42	WG2045914

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	0.00285		0.000467	0.00100	1	04/19/2023 19:51	WG2044884
Toluene	0.0139		0.00130	0.00500	1	04/19/2023 19:51	WG2044884
Ethylbenzene	0.00441		0.000737	0.00250	1	04/19/2023 19:51	WG2044884
Xylenes, Total	0.0373		0.000880	0.00650	1	04/19/2023 19:51	WG2044884
1,2,4-Trimethylbenzene	0.0210		0.00158	0.00500	1	04/19/2023 19:51	WG2044884
1,3,5-Trimethylbenzene	0.00688		0.00200	0.00500	1	04/19/2023 19:51	WG2044884
(S) Toluene-d8	107			75.0-131		04/19/2023 19:51	WG2044884
(S) 4-Bromofluorobenzene	105			67.0-138		04/19/2023 19:51	WG2044884
(S) 1,2-Dichloroethane-d4	105			70.0-130		04/19/2023 19:51	WG2044884

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	559		16.1	40.0	10	04/19/2023 09:05	WG2043613
C28-C36 Motor Oil Range	499		2.74	40.0	10	04/19/2023 09:05	WG2043613
(S) o-Terphenyl	52.7			18.0-148		04/19/2023 09:05	WG2043613

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.00544	U	0.00209	0.00600	1	04/19/2023 02:03	WG2044200
Anthracene	U		0.00230	0.00600	1	04/19/2023 02:03	WG2044200
Benzo(a)anthracene	U		0.00173	0.00600	1	04/19/2023 02:03	WG2044200
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/19/2023 02:03	WG2044200
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/19/2023 02:03	WG2044200
Benzo(a)pyrene	U		0.00179	0.00600	1	04/19/2023 02:03	WG2044200
Chrysene	U		0.00232	0.00600	1	04/19/2023 02:03	WG2044200
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/19/2023 02:03	WG2044200
Fluoranthene	0.00246	U	0.00227	0.00600	1	04/19/2023 02:03	WG2044200
Fluorene	0.0136		0.00205	0.00600	1	04/19/2023 02:03	WG2044200
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/19/2023 02:03	WG2044200
1-Methylnaphthalene	0.0202		0.00449	0.0200	1	04/19/2023 02:03	WG2044200
2-Methylnaphthalene	0.0471		0.00427	0.0200	1	04/19/2023 02:03	WG2044200
Naphthalene	0.0123	U	0.00408	0.0200	1	04/19/2023 02:03	WG2044200
Pyrene	0.0114		0.00200	0.00600	1	04/19/2023 02:03	WG2044200
(S) p-Terphenyl-d14	85.8			23.0-120		04/19/2023 02:03	WG2044200
(S) Nitrobenzene-d5	95.3			14.0-149		04/19/2023 02:03	WG2044200
(S) 2-Fluorobiphenyl	75.2			34.0-125		04/19/2023 02:03	WG2044200

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.826		1	04/21/2023 15:35	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/19/2023 14:30	WG2043469

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.91	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:
L1605741-02 WG2043721: 7.91 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	345		10.0	1	04/19/2023 11:36	WG2040784

Sample Narrative:
L1605741-02 WG2040784: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.546		0.0167	0.200	1	04/20/2023 00:46	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.40		0.100	1.00	5	04/19/2023 13:30	WG2043643
Barium	16200		60.8	1000	2000	04/19/2023 14:29	WG2043643
Cadmium	0.251	J	0.0855	1.00	5	04/19/2023 13:30	WG2043643
Copper	7.70		0.132	5.00	5	04/19/2023 13:30	WG2043643
Lead	12.9		0.0990	2.00	5	04/19/2023 13:30	WG2043643
Nickel	3.52		0.197	2.50	5	04/19/2023 13:30	WG2043643
Selenium	0.212	J	0.180	2.50	5	04/19/2023 13:30	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:30	WG2043643
Zinc	42.5		0.740	25.0	5	04/19/2023 13:30	WG2043643

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	0.0267	J	0.0217	0.100	1	04/20/2023 18:07	WG2045371
(S) a,a,a-Trifluorotoluene(FID)	98.2			77.0-120		04/20/2023 18:07	WG2045371

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	04/18/2023 15:29	WG2043923
Toluene	U		0.00130	0.00500	1	04/18/2023 15:29	WG2043923
Ethylbenzene	U		0.000737	0.00250	1	04/18/2023 15:29	WG2043923
Xylenes, Total	U		0.000880	0.00650	1	04/18/2023 15:29	WG2043923
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/18/2023 15:29	WG2043923
1,3,5-Trimethylbenzene	0.00678		0.00200	0.00500	1	04/18/2023 15:29	WG2043923
(S) Toluene-d8	103			75.0-131		04/18/2023 15:29	WG2043923
(S) 4-Bromofluorobenzene	96.1			67.0-138		04/18/2023 15:29	WG2043923
(S) 1,2-Dichloroethane-d4	94.7			70.0-130		04/18/2023 15:29	WG2043923

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	23.0		1.61	4.00	1	04/19/2023 01:03	WG2043613
C28-C36 Motor Oil Range	14.6		0.274	4.00	1	04/19/2023 01:03	WG2043613
(S) o-Terphenyl	37.4			18.0-148		04/19/2023 01:03	WG2043613

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	04/19/2023 02:23	WG2044200
Anthracene	U		0.00230	0.00600	1	04/19/2023 02:23	WG2044200
Benzo(a)anthracene	U		0.00173	0.00600	1	04/19/2023 02:23	WG2044200
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/19/2023 02:23	WG2044200
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/19/2023 02:23	WG2044200
Benzo(a)pyrene	U		0.00179	0.00600	1	04/19/2023 02:23	WG2044200
Chrysene	U		0.00232	0.00600	1	04/19/2023 02:23	WG2044200
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/19/2023 02:23	WG2044200
Fluoranthene	U		0.00227	0.00600	1	04/19/2023 02:23	WG2044200
Fluorene	0.00428	U	0.00205	0.00600	1	04/19/2023 02:23	WG2044200
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/19/2023 02:23	WG2044200
1-Methylnaphthalene	0.0128	U	0.00449	0.0200	1	04/19/2023 02:23	WG2044200
2-Methylnaphthalene	0.0328		0.00427	0.0200	1	04/19/2023 02:23	WG2044200
Naphthalene	0.00754	U	0.00408	0.0200	1	04/19/2023 02:23	WG2044200
Pyrene	0.00202	U	0.00200	0.00600	1	04/19/2023 02:23	WG2044200
(S) p-Terphenyl-d14	63.8			23.0-120		04/19/2023 02:23	WG2044200
(S) Nitrobenzene-d5	89.2			14.0-149		04/19/2023 02:23	WG2044200
(S) 2-Fluorobiphenyl	59.2			34.0-125		04/19/2023 02:23	WG2044200

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.29		1	04/21/2023 15:38	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/19/2023 14:35	WG2043469

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.02	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:

L1605741-03 WG2043721: 9.02 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	190		10.0	1	04/19/2023 11:36	WG2040784

Sample Narrative:

L1605741-03 WG2040784: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.540		0.0167	0.200	1	04/20/2023 00:48	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.31		0.100	1.00	5	04/19/2023 13:33	WG2043643
Barium	194		0.608	10.0	20	04/19/2023 14:32	WG2043643
Cadmium	0.142	J	0.0855	1.00	5	04/19/2023 13:33	WG2043643
Copper	7.21		0.132	5.00	5	04/19/2023 13:33	WG2043643
Lead	8.22		0.0990	2.00	5	04/19/2023 13:33	WG2043643
Nickel	9.83		0.197	2.50	5	04/19/2023 13:33	WG2043643
Selenium	0.440	J	0.180	2.50	5	04/19/2023 13:33	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:33	WG2043643
Zinc	26.0		0.740	25.0	5	04/19/2023 13:33	WG2043643

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	0.0405	B J	0.0217	0.100	1	04/19/2023 18:56	WG2044634
(S) a,a,a-Trifluorotoluene(FID)	97.8			77.0-120		04/19/2023 18:56	WG2044634

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	04/18/2023 15:48	WG2043923
Toluene	U		0.00130	0.00500	1	04/18/2023 15:48	WG2043923
Ethylbenzene	U		0.000737	0.00250	1	04/18/2023 15:48	WG2043923
Xylenes, Total	U		0.000880	0.00650	1	04/18/2023 15:48	WG2043923
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/18/2023 15:48	WG2043923
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/18/2023 15:48	WG2043923
(S) Toluene-d8	104			75.0-131		04/18/2023 15:48	WG2043923
(S) 4-Bromofluorobenzene	96.4			67.0-138		04/18/2023 15:48	WG2043923
(S) 1,2-Dichloroethane-d4	96.4			70.0-130		04/18/2023 15:48	WG2043923

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	04/19/2023 00:38	WG2043613
C28-C36 Motor Oil Range	0.354	J	0.274	4.00	1	04/19/2023 00:38	WG2043613
(S) o-Terphenyl	51.4			18.0-148		04/19/2023 00:38	WG2043613

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	04/19/2023 02:43	WG2044200
Anthracene	U		0.00230	0.00600	1	04/19/2023 02:43	WG2044200
Benzo(a)anthracene	U		0.00173	0.00600	1	04/19/2023 02:43	WG2044200
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/19/2023 02:43	WG2044200
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/19/2023 02:43	WG2044200
Benzo(a)pyrene	U		0.00179	0.00600	1	04/19/2023 02:43	WG2044200
Chrysene	U		0.00232	0.00600	1	04/19/2023 02:43	WG2044200
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/19/2023 02:43	WG2044200
Fluoranthene	U		0.00227	0.00600	1	04/19/2023 02:43	WG2044200
Fluorene	U		0.00205	0.00600	1	04/19/2023 02:43	WG2044200
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/19/2023 02:43	WG2044200
1-Methylnaphthalene	U		0.00449	0.0200	1	04/19/2023 02:43	WG2044200
2-Methylnaphthalene	U		0.00427	0.0200	1	04/19/2023 02:43	WG2044200
Naphthalene	U		0.00408	0.0200	1	04/19/2023 02:43	WG2044200
Pyrene	U		0.00200	0.00600	1	04/19/2023 02:43	WG2044200
(S) p-Terphenyl-d14	70.9			23.0-120		04/19/2023 02:43	WG2044200
(S) Nitrobenzene-d5	95.4			14.0-149		04/19/2023 02:43	WG2044200
(S) 2-Fluorobiphenyl	45.7			34.0-125		04/19/2023 02:43	WG2044200

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.516		1	04/21/2023 15:41	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/19/2023 14:46	WG2043469

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:

L1605741-04 WG2043721: 8.22 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	204		10.0	1	04/20/2023 14:07	WG2044560

Sample Narrative:

L1605741-04 WG2044560: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.413		0.0167	0.200	1	04/20/2023 00:51	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.10		0.100	1.00	5	04/19/2023 13:43	WG2043643
Barium	328		1.52	25.0	50	04/19/2023 14:35	WG2043643
Cadmium	0.239	J	0.0855	1.00	5	04/19/2023 13:43	WG2043643
Copper	10.1		0.132	5.00	5	04/19/2023 13:43	WG2043643
Lead	10.4		0.0990	2.00	5	04/19/2023 13:43	WG2043643
Nickel	13.2		0.197	2.50	5	04/19/2023 13:43	WG2043643
Selenium	0.666	J	0.180	2.50	5	04/19/2023 13:43	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:43	WG2043643
Zinc	37.2		0.740	25.0	5	04/19/2023 13:43	WG2043643

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	U		0.0217	0.100	1	04/19/2023 05:13	WG2044249
(S) a,a,a-Trifluorotoluene(FID)	96.9			77.0-120		04/19/2023 05:13	WG2044249

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	04/18/2023 16:07	WG2043923
Toluene	U		0.00130	0.00500	1	04/18/2023 16:07	WG2043923
Ethylbenzene	U		0.000737	0.00250	1	04/18/2023 16:07	WG2043923
Xylenes, Total	U		0.000880	0.00650	1	04/18/2023 16:07	WG2043923
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/18/2023 16:07	WG2043923
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/18/2023 16:07	WG2043923
(S) Toluene-d8	102			75.0-131		04/18/2023 16:07	WG2043923
(S) 4-Bromofluorobenzene	95.1			67.0-138		04/18/2023 16:07	WG2043923
(S) 1,2-Dichloroethane-d4	99.9			70.0-130		04/18/2023 16:07	WG2043923

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	04/19/2023 00:50	WG2043613
C28-C36 Motor Oil Range	0.463	J	0.274	4.00	1	04/19/2023 00:50	WG2043613
(S) o-Terphenyl	44.4			18.0-148		04/19/2023 00:50	WG2043613

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	04/19/2023 03:02	WG2044200
Anthracene	U		0.00230	0.00600	1	04/19/2023 03:02	WG2044200
Benzo(a)anthracene	U		0.00173	0.00600	1	04/19/2023 03:02	WG2044200
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/19/2023 03:02	WG2044200
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/19/2023 03:02	WG2044200
Benzo(a)pyrene	U		0.00179	0.00600	1	04/19/2023 03:02	WG2044200
Chrysene	U		0.00232	0.00600	1	04/19/2023 03:02	WG2044200
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/19/2023 03:02	WG2044200
Fluoranthene	U		0.00227	0.00600	1	04/19/2023 03:02	WG2044200
Fluorene	U		0.00205	0.00600	1	04/19/2023 03:02	WG2044200
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/19/2023 03:02	WG2044200
1-Methylnaphthalene	U		0.00449	0.0200	1	04/19/2023 03:02	WG2044200
2-Methylnaphthalene	U		0.00427	0.0200	1	04/19/2023 03:02	WG2044200
Naphthalene	U		0.00408	0.0200	1	04/19/2023 03:02	WG2044200
Pyrene	U		0.00200	0.00600	1	04/19/2023 03:02	WG2044200
(S) p-Terphenyl-d14	98.9			23.0-120		04/19/2023 03:02	WG2044200
(S) Nitrobenzene-d5	101			14.0-149		04/19/2023 03:02	WG2044200
(S) 2-Fluorobiphenyl	86.1			34.0-125		04/19/2023 03:02	WG2044200

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3915327-1 04/19/23 12:55

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1605650-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1605650-01 04/19/23 14:15 • (DUP) R3915327-8 04/19/23 14:20

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.308	U	1	200	P1	20

L1605741-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1605741-03 04/19/23 14:35 • (DUP) R3915327-9 04/19/23 14:41

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

Laboratory Control Sample (LCS)

(LCS) R3915327-2 04/19/23 13:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.5	105	80.0-120	

L1605649-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605649-03 04/19/23 13:07 • (MS) R3915327-3 04/19/23 13:12 • (MSD) R3915327-4 04/19/23 13:18

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 %
Hexavalent Chromium	20.0	0.362	18.3	18.6	89.6	91.3	1	75.0-125			1.87	20

L1605649-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1605649-03 04/19/23 13:07 • (MS) R3915327-6 04/19/23 13:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	638	0.362	U	0.000	50	75.0-125	J6

L1605649-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1605649-04 04/18/23 14:11 • (DUP) R3914447-2 04/18/23 14:11

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.95	7.92	1	0.378		1

Sample Narrative:
OS: 7.95 at 20.5C
DUP: 7.92 at 20.5C

L1605649-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1605649-05 04/18/23 14:11 • (DUP) R3914447-3 04/18/23 14:11

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.19	8.17	1	0.244		1

Sample Narrative:
OS: 8.19 at 19.7C
DUP: 8.17 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3914447-1 04/18/23 14:11

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

Sample Narrative:
LCS: 9.99 at 19.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3914860-1 04/19/23 11:36

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

Sample Narrative:

BLANK: at 25C

L1605450-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1605450-02 04/19/23 11:36 • (DUP) R3914860-3 04/19/23 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	13.6	11.2	1	18.7		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1605744-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1605744-03 04/19/23 11:36 • (DUP) R3914860-4 04/19/23 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	143	141	1	1.55		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3914860-2 04/19/23 11:36

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1120	100	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3915449-1 04/20/23 14:07

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

Sample Narrative:

BLANK: at 25C

L1605710-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1605710-07 04/20/23 14:07 • (DUP) R3915449-3 04/20/23 14:07

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1140	1140	1	0.0876		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1606425-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1606425-04 04/20/23 14:07 • (DUP) R3915449-4 04/20/23 14:07

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	57.3	57.0	1	0.525		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3915449-2 04/20/23 14:07

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1090	97.7	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3915185-1 04/20/23 00:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3915185-2 04/20/23 00:05 • (LCSD) R3915185-3 04/20/23 00:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.05	1.07	105	107	80.0-120			2.24	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3914947-1 04/19/23 13:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	0.574	U	0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3914947-2 04/19/23 13:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.3	95.3	80.0-120	
Barium	100	98.6	98.6	80.0-120	
Cadmium	100	99.4	99.4	80.0-120	
Copper	100	95.5	95.5	80.0-120	
Lead	100	95.9	95.9	80.0-120	
Nickel	100	97.0	97.0	80.0-120	
Selenium	100	110	110	80.0-120	
Silver	20.0	20.0	100	80.0-120	
Zinc	100	95.9	95.9	80.0-120	

L1605744-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605744-02 04/19/23 13:10 • (MS) R3914947-5 04/19/23 13:20 • (MSD) R3914947-6 04/19/23 13:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.96	92.3	104	84.3	96.0	5	75.0-125			11.9	20
Barium	100	119	218	227	98.6	108	5	75.0-125	E	E	4.13	20
Cadmium	100	0.235	91.5	95.1	91.3	94.9	5	75.0-125			3.80	20
Copper	100	7.90	93.5	99.8	85.6	91.9	5	75.0-125			6.55	20
Lead	100	11.0	99.8	107	88.9	95.6	5	75.0-125			6.57	20
Nickel	100	9.01	94.4	101	85.4	92.3	5	75.0-125			7.12	20
Selenium	100	0.539	104	108	103	108	5	75.0-125			4.22	20
Silver	20.0	U	18.8	19.4	93.8	97.0	5	75.0-125			3.38	20
Zinc	100	35.6	120	130	84.1	94.8	5	75.0-125			8.54	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3914750-2 04/18/23 21:06

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)	97.7			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3914750-1 04/18/23 20:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.69	85.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			108	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3915179-2 04/19/23 15:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0218	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3915179-1 04/19/23 14:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.41	98.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3916390-2 04/20/23 12:36

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)	98.0			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3916390-1 04/20/23 11:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.75	86.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3915836-2 04/20/23 11:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	1.01	⬇	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	92.6			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3915836-1 04/20/23 10:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.12	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			99.1	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3914940-3 04/18/23 10:13

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	103			75.0-131
(S) 4-Bromofluorobenzene	93.8			67.0-138
(S) 1,2-Dichloroethane-d4	95.0			70.0-130

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

(LCS) R3914940-1 04/18/23 08:38 • (LCSD) R3914940-2 04/18/23 08:57

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	0.113	0.106	90.4	84.8	70.0-123			6.39	20
Toluene	0.125	0.104	0.0998	83.2	79.8	75.0-121			4.12	20
Ethylbenzene	0.125	0.109	0.100	87.2	80.0	74.0-126			8.61	20
Xylenes, Total	0.375	0.321	0.293	85.6	78.1	72.0-127			9.12	20
1,2,4-Trimethylbenzene	0.125	0.107	0.108	85.6	86.4	70.0-126			0.930	20
1,3,5-Trimethylbenzene	0.125	0.108	0.115	86.4	92.0	73.0-127			6.28	20
(S) Toluene-d8				96.2	98.7	75.0-131				
(S) 4-Bromofluorobenzene				102	93.9	67.0-138				
(S) 1,2-Dichloroethane-d4				102	101	70.0-130				

L1605650-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605650-01 04/18/23 15:10 • (MS) R3914940-4 04/18/23 20:31 • (MSD) R3914940-5 04/18/23 20:50

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	0.125	U	0.119	0.111	95.2	88.8	1	10.0-149			6.96	37
Toluene	0.125	0.00228	0.108	0.0992	84.6	77.5	1	10.0-156			8.49	38
Ethylbenzene	0.125	0.00120	0.111	0.102	87.8	80.6	1	10.0-160			8.45	38
Xylenes, Total	0.375	0.0463	0.373	0.390	87.1	91.7	1	10.0-160			4.46	38
1,2,4-Trimethylbenzene	0.125	0.0529	0.187	0.242	107	151	1	10.0-160			25.6	36
1,3,5-Trimethylbenzene	0.125	0.392	0.545	0.942	122	440	1	10.0-160		J3 J5	53.4	38
(S) Toluene-d8					92.3	87.8		75.0-131				
(S) 4-Bromofluorobenzene					121	163		67.0-138		J1		
(S) 1,2-Dichloroethane-d4					99.2	91.1		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3915266-3 04/19/23 18:36

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	109			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	106			70.0-130

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

(LCS) R3915266-1 04/19/23 17:01 • (LCSD) R3915266-2 04/19/23 17:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.125	0.110	100	88.0	70.0-123			12.8	20
Toluene	0.125	0.123	0.112	98.4	89.6	75.0-121			9.36	20
Ethylbenzene	0.125	0.132	0.119	106	95.2	74.0-126			10.4	20
Xylenes, Total	0.375	0.415	0.365	111	97.3	72.0-127			12.8	20
1,2,4-Trimethylbenzene	0.125	0.123	0.118	98.4	94.4	70.0-126			4.15	20
1,3,5-Trimethylbenzene	0.125	0.121	0.120	96.8	96.0	73.0-127			0.830	20
(S) Toluene-d8				107	106	75.0-131				
(S) 4-Bromofluorobenzene				110	106	67.0-138				
(S) 1,2-Dichloroethane-d4				108	104	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3914716-1 04/19/23 00:13

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	75.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3914716-2 04/19/23 00:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.0	64.0	50.0-150	
(S) o-Terphenyl			65.9	18.0-148	

L1605660-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605660-22 04/19/23 01:28 • (MS) R3914716-3 04/19/23 01:41 • (MSD) R3914716-4 04/19/23 01:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.8	U	36.5	34.9	74.8	71.5	1	50.0-150			4.48	20
(S) o-Terphenyl					55.4	55.8		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3914751-2 04/19/23 01:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	82.5			23.0-120
(S) Nitrobenzene-d5	72.8			14.0-149
(S) 2-Fluorobiphenyl	68.8			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3914751-1 04/19/23 01:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0678	84.8	50.0-120	
Anthracene	0.0800	0.0682	85.3	50.0-126	
Benzo(a)anthracene	0.0800	0.0706	88.3	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0715	89.4	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0703	87.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0709	88.6	42.0-120	
Chrysene	0.0800	0.0699	87.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0728	91.0	47.0-125	
Fluoranthene	0.0800	0.0713	89.1	49.0-129	
Fluorene	0.0800	0.0683	85.4	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0772	96.5	46.0-125	
1-Methylnaphthalene	0.0800	0.0706	88.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0713	89.1	50.0-120	
Naphthalene	0.0800	0.0685	85.6	50.0-120	
Pyrene	0.0800	0.0671	83.9	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3914751-1 04/19/23 01:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			96.5	23.0-120	
(S) Nitrobenzene-d5			100	14.0-149	
(S) 2-Fluorobiphenyl			85.0	34.0-125	

L1605818-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605818-03 04/19/23 03:22 • (MS) R3914751-3 04/19/23 03:42 • (MSD) R3914751-4 04/19/23 04:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0796	0.716	0.852	0.605	171	0.000	1	14.0-127	V	J3 V	33.9	27
Anthracene	0.0796	U	0.109	0.0924	137	116	1	10.0-145			16.5	30
Benzo(a)anthracene	0.0796	0.00687	0.0773	0.0732	88.5	83.3	1	10.0-139			5.45	30
Benzo(b)fluoranthene	0.0796	0.00420	0.0677	0.0645	79.8	75.8	1	10.0-140			4.84	36
Benzo(k)fluoranthene	0.0796	U	0.0648	0.0621	81.4	78.0	1	10.0-137			4.26	31
Benzo(a)pyrene	0.0796	0.00299	0.0770	0.0740	93.0	89.2	1	10.0-141			3.97	31
Chrysene	0.0796	0.00628	0.0736	0.0699	84.6	79.9	1	10.0-145			5.16	30
Dibenz(a,h)anthracene	0.0796	U	0.0670	0.0647	84.2	81.3	1	10.0-132			3.49	31
Fluoranthene	0.0796	0.0535	0.119	0.106	82.3	66.0	1	10.0-153			11.6	33
Fluorene	0.0796	0.828	0.980	0.679	191	0.000	1	11.0-130	V	J3 V	36.3	29
Indeno(1,2,3-cd)pyrene	0.0796	0.00213	0.0752	0.0748	91.8	91.3	1	10.0-137			0.533	32
1-Methylnaphthalene	0.0796	2.08	2.44	1.60	452	0.000	1	10.0-142	V	J3 V	41.6	28
2-Methylnaphthalene	0.0796	0.967	1.20	0.759	293	0.000	1	10.0-137	V	J3 V	45.0	28
Naphthalene	0.0796	0.158	0.232	0.184	93.0	32.7	1	10.0-135			23.1	27
Pyrene	0.0796	0.0797	0.143	0.122	79.5	53.1	1	10.0-148			15.8	35
(S) p-Terphenyl-d14					73.6	69.0		23.0-120				
(S) Nitrobenzene-d5					247	200		14.0-149	J1	J1		
(S) 2-Fluorobiphenyl					79.6	72.4		34.0-125				

Sample Narrative:

OS: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

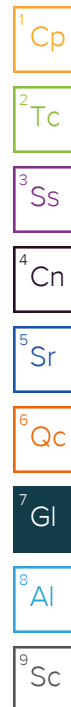
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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



Condition:
NCF / OK

Caerus Oil and Gas

Sample Delivery Group: L1605744
Samples Received: 04/15/2023
Project Number: L9
Description: L9 Facility Decommissioning
Site: L9
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

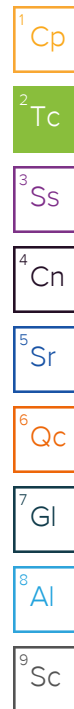
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory 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

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SAMPLE SUMMARY

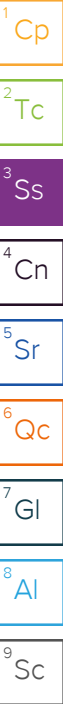
20230413-L9-(BG1)@0.5-1 L1605744-01 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 14:30

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:43	04/21/23 15:43	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2044448	1	04/19/23 02:54	04/20/23 03:06	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2044560	1	04/20/23 11:30	04/20/23 14:07	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:54	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	10	04/18/23 15:16	04/19/23 14:39	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:46	JPD	Mt. Juliet, TN



20230413-L9-(BG1)@1.5-2 L1605744-02 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 14:35

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:46	04/21/23 15:46	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2044448	1	04/19/23 02:54	04/20/23 03:34	VSS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2044560	1	04/20/23 11:30	04/20/23 14:07	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:57	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	10	04/18/23 15:16	04/19/23 14:22	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:10	JPD	Mt. Juliet, TN

20230413-L9-(BG2)@1-1.5 L1605744-03 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 14:55

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:57	04/21/23 15:57	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2044448	1	04/19/23 02:54	04/20/23 03:39	VSS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2040784	1	04/19/23 09:00	04/19/23 11:36	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/20/23 00:59	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	10	04/18/23 15:16	04/19/23 14:42	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:49	JPD	Mt. Juliet, TN

20230413-L9-(BG2)@2-2.5 L1605744-04 Solid

Collected by
Kevin Fletcher

Collected date/time
04/13/23 15:00

Received date/time
04/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2043100	1	04/21/23 15:49	04/21/23 15:49	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2044448	1	04/19/23 02:54	04/20/23 03:44	VSS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2043721	1	04/18/23 08:57	04/18/23 14:11	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2044560	1	04/20/23 11:30	04/20/23 14:07	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2043095	1	04/18/23 08:29	04/19/23 23:54	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2043643	5	04/18/23 15:16	04/19/23 13:53	JPD	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.237		1	04/21/2023 15:43	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J6	0.255	1.00	1	04/20/2023 03:06	WG2044448

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.05	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:

L1605744-01 WG2043721: 8.05 at 19.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	198		10.0	1	04/20/2023 14:07	WG2044560

Sample Narrative:

L1605744-01 WG2044560: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.404		0.0167	0.200	1	04/20/2023 00:54	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.31		0.100	1.00	5	04/19/2023 13:46	WG2043643
Barium	138		0.304	5.00	10	04/19/2023 14:39	WG2043643
Cadmium	0.232	J	0.0855	1.00	5	04/19/2023 13:46	WG2043643
Copper	10.7		0.132	5.00	5	04/19/2023 13:46	WG2043643
Lead	11.4		0.0990	2.00	5	04/19/2023 13:46	WG2043643
Nickel	11.4		0.197	2.50	5	04/19/2023 13:46	WG2043643
Selenium	0.620	J	0.180	2.50	5	04/19/2023 13:46	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:46	WG2043643
Zinc	45.3		0.740	25.0	5	04/19/2023 13:46	WG2043643

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.212		1	04/21/2023 15:46	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/20/2023 03:34	WG2044448

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.05	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:

L1605744-02 WG2043721: 8.05 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	195		10.0	1	04/20/2023 14:07	WG2044560

Sample Narrative:

L1605744-02 WG2044560: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.324		0.0167	0.200	1	04/20/2023 00:57	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.96	O1	0.100	1.00	5	04/19/2023 13:10	WG2043643
Barium	119		0.304	5.00	10	04/19/2023 14:22	WG2043643
Cadmium	0.235	J	0.0855	1.00	5	04/19/2023 13:10	WG2043643
Copper	7.90	O1	0.132	5.00	5	04/19/2023 13:10	WG2043643
Lead	11.0	O1	0.0990	2.00	5	04/19/2023 13:10	WG2043643
Nickel	9.01	O1	0.197	2.50	5	04/19/2023 13:10	WG2043643
Selenium	0.539	J	0.180	2.50	5	04/19/2023 13:10	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:10	WG2043643
Zinc	35.6	O1	0.740	25.0	5	04/19/2023 13:10	WG2043643

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.161		1	04/21/2023 15:57	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/20/2023 03:39	WG2044448

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:

L1605744-03 WG2043721: 8.22 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	143		10.0	1	04/19/2023 11:36	WG2040784

Sample Narrative:

L1605744-03 WG2040784: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.406		0.0167	0.200	1	04/20/2023 00:59	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.08		0.100	1.00	5	04/19/2023 13:49	WG2043643
Barium	124		0.304	5.00	10	04/19/2023 14:42	WG2043643
Cadmium	0.166	J	0.0855	1.00	5	04/19/2023 13:49	WG2043643
Copper	9.00		0.132	5.00	5	04/19/2023 13:49	WG2043643
Lead	10.6		0.0990	2.00	5	04/19/2023 13:49	WG2043643
Nickel	9.30		0.197	2.50	5	04/19/2023 13:49	WG2043643
Selenium	0.574	J	0.180	2.50	5	04/19/2023 13:49	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:49	WG2043643
Zinc	35.0		0.740	25.0	5	04/19/2023 13:49	WG2043643

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.358		1	04/21/2023 15:49	WG2043100

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	04/20/2023 03:44	WG2044448

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	T8	1	04/18/2023 14:11	WG2043721

Sample Narrative:

L1605744-04 WG2043721: 8.22 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	108		10.0	1	04/20/2023 14:07	WG2044560

Sample Narrative:

L1605744-04 WG2044560: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.283		0.0167	0.200	1	04/19/2023 23:54	WG2043095

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.17		0.100	1.00	5	04/19/2023 13:53	WG2043643
Barium	85.8		0.152	2.50	5	04/19/2023 13:53	WG2043643
Cadmium	0.183	J	0.0855	1.00	5	04/19/2023 13:53	WG2043643
Copper	11.1		0.132	5.00	5	04/19/2023 13:53	WG2043643
Lead	11.7		0.0990	2.00	5	04/19/2023 13:53	WG2043643
Nickel	9.91		0.197	2.50	5	04/19/2023 13:53	WG2043643
Selenium	0.555	J	0.180	2.50	5	04/19/2023 13:53	WG2043643
Silver	U		0.0865	0.500	5	04/19/2023 13:53	WG2043643
Zinc	41.9		0.740	25.0	5	04/19/2023 13:53	WG2043643

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3915197-1 04/20/23 02:49

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

L1606413-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1606413-02 04/20/23 04:26 • (DUP) R3915197-7 04/20/23 04:31

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

L1606422-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1606422-07 04/20/23 05:33 • (DUP) R3915197-8 04/20/23 05:39

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

Laboratory Control Sample (LCS)

(LCS) R3915197-2 04/20/23 02:56

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.57	95.7	80.0-120	

L1605744-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605744-01 04/20/23 03:06 • (MS) R3915197-4 04/20/23 03:19 • (MSD) R3915197-5 04/20/23 03:24

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	11.4	12.7	56.8	63.3	1	75.0-125	J6	J6	10.9	20

L1605744-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1605744-01 04/20/23 03:06 • (MS) R3915197-6 04/20/23 03:29

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	648	U	688	106	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1605649-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1605649-04 04/18/23 14:11 • (DUP) R3914447-2 04/18/23 14:11

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.95	7.92	1	0.378		1

Sample Narrative:

OS: 7.95 at 20.5C

DUP: 7.92 at 20.5C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1605649-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1605649-05 04/18/23 14:11 • (DUP) R3914447-3 04/18/23 14:11

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.19	8.17	1	0.244		1

Sample Narrative:

OS: 8.19 at 19.7C

DUP: 8.17 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3914447-1 04/18/23 14:11

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

Sample Narrative:

LCS: 9.99 at 19.2C

Method Blank (MB)

(MB) R3914860-1 04/19/23 11:36

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

Sample Narrative:

BLANK: at 25C

L1605450-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1605450-02 04/19/23 11:36 • (DUP) R3914860-3 04/19/23 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	13.6	11.2	1	18.7		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1605744-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1605744-03 04/19/23 11:36 • (DUP) R3914860-4 04/19/23 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	143	141	1	1.55		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3914860-2 04/19/23 11:36

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1120	100	85.0-115	

Sample Narrative:

LCS: at 25C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3915449-1 04/20/23 14:07

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

Sample Narrative:

BLANK: at 25C

L1605710-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1605710-07 04/20/23 14:07 • (DUP) R3915449-3 04/20/23 14:07

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1140	1140	1	0.0876		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1606425-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1606425-04 04/20/23 14:07 • (DUP) R3915449-4 04/20/23 14:07

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	57.3	57.0	1	0.525		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3915449-2 04/20/23 14:07

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1090	97.7	85.0-115	

Sample Narrative:

LCS: at 25C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3915185-1 04/20/23 00:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3915185-2 04/20/23 00:05 • (LCSD) R3915185-3 04/20/23 00:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.05	1.07	105	107	80.0-120			2.24	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3914947-1 04/19/23 13:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	0.574	U	0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3914947-2 04/19/23 13:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.3	95.3	80.0-120	
Barium	100	98.6	98.6	80.0-120	
Cadmium	100	99.4	99.4	80.0-120	
Copper	100	95.5	95.5	80.0-120	
Lead	100	95.9	95.9	80.0-120	
Nickel	100	97.0	97.0	80.0-120	
Selenium	100	110	110	80.0-120	
Silver	20.0	20.0	100	80.0-120	
Zinc	100	95.9	95.9	80.0-120	

L1605744-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605744-02 04/19/23 13:10 • (MS) R3914947-5 04/19/23 13:20 • (MSD) R3914947-6 04/19/23 13:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.96	92.3	104	84.3	96.0	5	75.0-125			11.9	20
Barium	100	119	218	227	98.6	108	5	75.0-125	E	E	4.13	20
Cadmium	100	0.235	91.5	95.1	91.3	94.9	5	75.0-125			3.80	20
Copper	100	7.90	93.5	99.8	85.6	91.9	5	75.0-125			6.55	20
Lead	100	11.0	99.8	107	88.9	95.6	5	75.0-125			6.57	20
Nickel	100	9.01	94.4	101	85.4	92.3	5	75.0-125			7.12	20
Selenium	100	0.539	104	108	103	108	5	75.0-125			4.22	20
Silver	20.0	U	18.8	19.4	93.8	97.0	5	75.0-125			3.38	20
Zinc	100	35.6	120	130	84.1	94.8	5	75.0-125			8.54	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

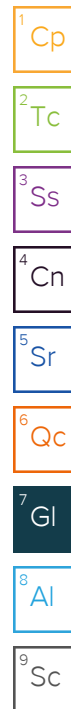
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
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.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



[illegible]

Caerus Oil and Gas

Sample Delivery Group: L1638228
Samples Received: 07/22/2023
Project Number: L9
Description: L9 Facility Decommissioning
Site: L9
Report To: Jake J / Blair R / Brett M
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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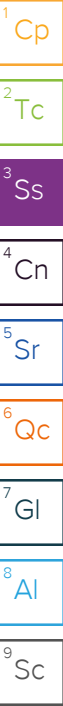


SAMPLE SUMMARY

20230720-L9-(BASE-HILL 9-14)@5 L1638228-01 Solid

Collected by Ben Herrmann
Collected date/time 07/20/23 10:35
Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2103035	1	07/30/23 01:47	07/30/23 01:47	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2101582	1	07/27/23 07:11	07/27/23 10:29	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2101861	1	07/26/23 09:51	07/26/23 11:28	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2101751	1	07/26/23 12:00	07/26/23 14:43	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2103038	1	07/27/23 16:46	08/01/23 09:24	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	10	07/27/23 02:51	07/30/23 23:17	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	5	07/27/23 02:51	07/30/23 21:49	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2102835	1	07/25/23 23:46	07/27/23 14:30	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2102338	1	07/25/23 23:46	07/26/23 21:57	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2103340	1	07/29/23 13:31	07/31/23 02:03	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2103335	1	07/28/23 21:20	07/29/23 05:15	JRM	Mt. Juliet, TN



20230720-L9-(SW-HILL 9-14)@5 L1638228-02 Solid

Collected by Ben Herrmann
Collected date/time 07/20/23 10:40
Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2103035	1	07/30/23 01:55	07/30/23 01:55	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2101582	1	07/27/23 07:11	07/27/23 10:34	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2101861	1	07/26/23 09:51	07/26/23 11:28	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2101751	1	07/26/23 12:00	07/26/23 14:43	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2103038	1	07/27/23 16:46	08/01/23 09:26	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	20	07/27/23 02:51	07/30/23 23:20	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	5	07/27/23 02:51	07/30/23 21:52	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2102835	1	07/25/23 23:46	07/27/23 14:48	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2102338	1	07/25/23 23:46	07/26/23 22:16	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2103340	1	07/29/23 13:31	07/31/23 01:38	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2103335	1	07/28/23 21:20	07/29/23 05:35	JRM	Mt. Juliet, TN

20230720-L9-(EW-HILL 9-14)@5 L1638228-03 Solid

Collected by Ben Herrmann
Collected date/time 07/20/23 10:45
Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2103035	1	07/30/23 01:58	07/30/23 01:58	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2101582	1	07/27/23 07:11	07/27/23 10:39	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2101861	1	07/26/23 09:51	07/26/23 11:28	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2101751	1	07/26/23 12:00	07/26/23 14:43	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2103038	1	07/27/23 16:46	08/01/23 09:29	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	5	07/27/23 02:51	07/30/23 21:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2102835	1	07/25/23 23:46	07/27/23 15:06	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2102338	1	07/25/23 23:46	07/26/23 22:34	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2103340	1	07/29/23 13:31	07/31/23 02:43	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2103335	1	07/28/23 21:20	07/29/23 05:54	JRM	Mt. Juliet, TN

20230720-L9-(NW-HILL 9-14)@5 L1638228-04 Solid

Collected by Ben Herrmann
Collected date/time 07/20/23 10:55
Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2103035	1	07/30/23 02:01	07/30/23 02:01	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2101582	1	07/27/23 07:11	07/27/23 10:50	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2101861	1	07/26/23 09:51	07/26/23 11:28	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2101751	1	07/26/23 12:00	07/26/23 14:43	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2103038	1	07/27/23 16:46	08/01/23 09:32	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	20	07/27/23 02:51	07/30/23 23:23	LD	Mt. Juliet, TN

SAMPLE SUMMARY

20230720-L9-(NW-HILL 9-14)@5 L1638228-04 Solid

Collected by Ben Herrmann
Collected date/time 07/20/23 10:55
Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG2102443	5	07/27/23 02:51	07/30/23 22:06	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2102835	1	07/25/23 23:46	07/27/23 15:24	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2102338	1	07/25/23 23:46	07/26/23 22:53	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2103340	10	07/29/23 13:31	07/31/23 04:14	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2103335	1	07/28/23 21:20	07/29/23 06:14	JRM	Mt. Juliet, TN

20230720-L9-(WW-HILL 9-14)@5 L1638228-05 Solid

Collected by Ben Herrmann
Collected date/time 07/20/23 11:00
Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2103035	1	07/30/23 02:03	07/30/23 02:03	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2101582	1	07/27/23 07:11	07/27/23 10:55	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2101861	1	07/26/23 09:51	07/26/23 11:28	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2101751	1	07/26/23 12:00	07/26/23 14:43	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2103038	1	07/27/23 16:46	08/01/23 09:35	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	10	07/27/23 02:51	07/30/23 23:27	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	5	07/27/23 02:51	07/30/23 22:09	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2102835	1	07/25/23 23:46	07/27/23 15:43	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2102338	1	07/25/23 23:46	07/26/23 23:12	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2103340	5	07/29/23 13:31	07/31/23 04:01	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2103335	1	07/28/23 21:20	07/29/23 06:33	JRM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

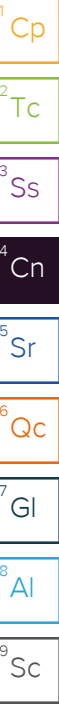
⁹Sc

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



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	2.26		1	07/30/2023 01:47	WG2103035

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	07/27/2023 10:29	WG2101582

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	pH				
pH	7.74	T8	1	07/26/2023 11:28	WG2101861

Sample Narrative:

L1638228-01 WG2101861: 7.74 at 23.6C

Wet Chemistry by Method 9050AMod

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	umhos/cm		umhos/cm			
Specific Conductance	793		10.0	1	07/26/2023 14:43	WG2101751

Sample Narrative:

L1638228-01 WG2101751: at 25C

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.396		0.0167	0.200	1	08/01/2023 09:24	WG2103038

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	4.39		0.100	1.00	5	07/30/2023 21:49	WG2102443
Barium	1430		0.304	5.00	10	07/30/2023 23:17	WG2102443
Cadmium	0.381	J	0.0855	1.00	5	07/30/2023 21:49	WG2102443
Copper	8.81		0.132	5.00	5	07/30/2023 21:49	WG2102443
Lead	8.87		0.0990	2.00	5	07/30/2023 21:49	WG2102443
Nickel	7.67		0.197	2.50	5	07/30/2023 21:49	WG2102443
Selenium	0.475	J	0.180	2.50	5	07/30/2023 21:49	WG2102443
Silver	U		0.0865	0.500	5	07/30/2023 21:49	WG2102443
Zinc	32.0		0.740	25.0	5	07/30/2023 21:49	WG2102443

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0328	J	0.0217	0.100	1	07/27/2023 14:30	WG2102835
(S) a,a,a-Trifluorotoluene(FID)	99.3			77.0-120		07/27/2023 14:30	WG2102835

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	07/26/2023 21:57	WG2102338
Toluene	U		0.00130	0.00500	1	07/26/2023 21:57	WG2102338
Ethylbenzene	U		0.000737	0.00250	1	07/26/2023 21:57	WG2102338
Xylenes, Total	U		0.000880	0.00650	1	07/26/2023 21:57	WG2102338
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/26/2023 21:57	WG2102338
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/26/2023 21:57	WG2102338
(S) Toluene-d8	105			75.0-131		07/26/2023 21:57	WG2102338
(S) 4-Bromofluorobenzene	107			67.0-138		07/26/2023 21:57	WG2102338
(S) 1,2-Dichloroethane-d4	122			70.0-130		07/26/2023 21:57	WG2102338

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	41.7	J3 J6	1.61	4.00	1	07/31/2023 02:03	WG2103340
C28-C36 Motor Oil Range	107		0.274	4.00	1	07/31/2023 02:03	WG2103340
(S) o-Terphenyl	49.4			18.0-148		07/31/2023 02:03	WG2103340

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/29/2023 05:15	WG2103335
Anthracene	U		0.00230	0.00600	1	07/29/2023 05:15	WG2103335
Benzo(a)anthracene	U		0.00173	0.00600	1	07/29/2023 05:15	WG2103335
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/29/2023 05:15	WG2103335
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/29/2023 05:15	WG2103335
Benzo(a)pyrene	U		0.00179	0.00600	1	07/29/2023 05:15	WG2103335
Chrysene	U		0.00232	0.00600	1	07/29/2023 05:15	WG2103335
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/29/2023 05:15	WG2103335
Fluoranthene	U		0.00227	0.00600	1	07/29/2023 05:15	WG2103335
Fluorene	U		0.00205	0.00600	1	07/29/2023 05:15	WG2103335
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/29/2023 05:15	WG2103335
1-Methylnaphthalene	U		0.00449	0.0200	1	07/29/2023 05:15	WG2103335
2-Methylnaphthalene	0.00686	U	0.00427	0.0200	1	07/29/2023 05:15	WG2103335
Naphthalene	U		0.00408	0.0200	1	07/29/2023 05:15	WG2103335
Pyrene	0.00227	U	0.00200	0.00600	1	07/29/2023 05:15	WG2103335
(S) p-Terphenyl-d14	69.0			23.0-120		07/29/2023 05:15	WG2103335
(S) Nitrobenzene-d5	75.8			14.0-149		07/29/2023 05:15	WG2103335
(S) 2-Fluorobiphenyl	55.9			34.0-125		07/29/2023 05:15	WG2103335

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.862		1	07/30/2023 01:55	WG2103035

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/27/2023 10:34	WG2101582

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.12	T8	1	07/26/2023 11:28	WG2101861

Sample Narrative:
L1638228-02 WG2101861: 8.12 at 23.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	295		10.0	1	07/26/2023 14:43	WG2101751

Sample Narrative:
L1638228-02 WG2101751: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.284		0.0167	0.200	1	08/01/2023 09:26	WG2103038

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.50		0.100	1.00	5	07/30/2023 21:52	WG2102443
Barium	1580		0.608	10.0	20	07/30/2023 23:20	WG2102443
Cadmium	0.170	J	0.0855	1.00	5	07/30/2023 21:52	WG2102443
Copper	9.02		0.132	5.00	5	07/30/2023 21:52	WG2102443
Lead	9.40		0.0990	2.00	5	07/30/2023 21:52	WG2102443
Nickel	8.10		0.197	2.50	5	07/30/2023 21:52	WG2102443
Selenium	0.448	J	0.180	2.50	5	07/30/2023 21:52	WG2102443
Silver	U		0.0865	0.500	5	07/30/2023 21:52	WG2102443
Zinc	33.8		0.740	25.0	5	07/30/2023 21:52	WG2102443

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	0.0707	J	0.0217	0.100	1	07/27/2023 14:48	WG2102835
(S) a,a,a-Trifluorotoluene(FID)	96.7			77.0-120		07/27/2023 14:48	WG2102835

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	07/26/2023 22:16	WG2102338
Toluene	U		0.00130	0.00500	1	07/26/2023 22:16	WG2102338
Ethylbenzene	U		0.000737	0.00250	1	07/26/2023 22:16	WG2102338
Xylenes, Total	U		0.000880	0.00650	1	07/26/2023 22:16	WG2102338
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/26/2023 22:16	WG2102338
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/26/2023 22:16	WG2102338
(S) Toluene-d8	103			75.0-131		07/26/2023 22:16	WG2102338
(S) 4-Bromofluorobenzene	104			67.0-138		07/26/2023 22:16	WG2102338
(S) 1,2-Dichloroethane-d4	120			70.0-130		07/26/2023 22:16	WG2102338

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	4.62		1.61	4.00	1	07/31/2023 01:38	WG2103340
C28-C36 Motor Oil Range	8.43		0.274	4.00	1	07/31/2023 01:38	WG2103340
(S) o-Terphenyl	58.8			18.0-148		07/31/2023 01:38	WG2103340

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/29/2023 05:35	WG2103335
Anthracene	U		0.00230	0.00600	1	07/29/2023 05:35	WG2103335
Benzo(a)anthracene	U		0.00173	0.00600	1	07/29/2023 05:35	WG2103335
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/29/2023 05:35	WG2103335
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/29/2023 05:35	WG2103335
Benzo(a)pyrene	U		0.00179	0.00600	1	07/29/2023 05:35	WG2103335
Chrysene	U		0.00232	0.00600	1	07/29/2023 05:35	WG2103335
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/29/2023 05:35	WG2103335
Fluoranthene	U		0.00227	0.00600	1	07/29/2023 05:35	WG2103335
Fluorene	U		0.00205	0.00600	1	07/29/2023 05:35	WG2103335
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/29/2023 05:35	WG2103335
1-Methylnaphthalene	U		0.00449	0.0200	1	07/29/2023 05:35	WG2103335
2-Methylnaphthalene	U		0.00427	0.0200	1	07/29/2023 05:35	WG2103335
Naphthalene	U		0.00408	0.0200	1	07/29/2023 05:35	WG2103335
Pyrene	U		0.00200	0.00600	1	07/29/2023 05:35	WG2103335
(S) p-Terphenyl-d14	62.0			23.0-120		07/29/2023 05:35	WG2103335
(S) Nitrobenzene-d5	82.8			14.0-149		07/29/2023 05:35	WG2103335
(S) 2-Fluorobiphenyl	40.0			34.0-125		07/29/2023 05:35	WG2103335

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.823		1	07/30/2023 01:58	WG2103035

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/27/2023 10:39	WG2101582

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	07/26/2023 11:28	WG2101861

Sample Narrative:
L1638228-03 WG2101861: 8.18 at 23.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	254		10.0	1	07/26/2023 14:43	WG2101751

Sample Narrative:
L1638228-03 WG2101751: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.267		0.0167	0.200	1	08/01/2023 09:29	WG2103038

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.92		0.100	1.00	5	07/30/2023 21:55	WG2102443
Barium	416		0.152	2.50	5	07/30/2023 21:55	WG2102443
Cadmium	0.192	J	0.0855	1.00	5	07/30/2023 21:55	WG2102443
Copper	9.51		0.132	5.00	5	07/30/2023 21:55	WG2102443
Lead	10.6		0.0990	2.00	5	07/30/2023 21:55	WG2102443
Nickel	8.08		0.197	2.50	5	07/30/2023 21:55	WG2102443
Selenium	0.433	J	0.180	2.50	5	07/30/2023 21:55	WG2102443
Silver	U		0.0865	0.500	5	07/30/2023 21:55	WG2102443
Zinc	35.5		0.740	25.0	5	07/30/2023 21:55	WG2102443

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	0.0346	J	0.0217	0.100	1	07/27/2023 15:06	WG2102835
(S) a,a,a-Trifluorotoluene(FID)	98.6			77.0-120		07/27/2023 15:06	WG2102835

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	07/26/2023 22:34	WG2102338
Toluene	U		0.00130	0.00500	1	07/26/2023 22:34	WG2102338
Ethylbenzene	U		0.000737	0.00250	1	07/26/2023 22:34	WG2102338
Xylenes, Total	U		0.000880	0.00650	1	07/26/2023 22:34	WG2102338
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/26/2023 22:34	WG2102338
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/26/2023 22:34	WG2102338
(S) Toluene-d8	103			75.0-131		07/26/2023 22:34	WG2102338
(S) 4-Bromofluorobenzene	102			67.0-138		07/26/2023 22:34	WG2102338
(S) 1,2-Dichloroethane-d4	121			70.0-130		07/26/2023 22:34	WG2102338

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	9.56		1.61	4.00	1	07/31/2023 02:43	WG2103340
C28-C36 Motor Oil Range	22.3		0.274	4.00	1	07/31/2023 02:43	WG2103340
(S) o-Terphenyl	48.8			18.0-148		07/31/2023 02:43	WG2103340

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/29/2023 05:54	WG2103335
Anthracene	U		0.00230	0.00600	1	07/29/2023 05:54	WG2103335
Benzo(a)anthracene	U		0.00173	0.00600	1	07/29/2023 05:54	WG2103335
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/29/2023 05:54	WG2103335
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/29/2023 05:54	WG2103335
Benzo(a)pyrene	U		0.00179	0.00600	1	07/29/2023 05:54	WG2103335
Chrysene	U		0.00232	0.00600	1	07/29/2023 05:54	WG2103335
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/29/2023 05:54	WG2103335
Fluoranthene	U		0.00227	0.00600	1	07/29/2023 05:54	WG2103335
Fluorene	U		0.00205	0.00600	1	07/29/2023 05:54	WG2103335
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/29/2023 05:54	WG2103335
1-Methylnaphthalene	U		0.00449	0.0200	1	07/29/2023 05:54	WG2103335
2-Methylnaphthalene	U		0.00427	0.0200	1	07/29/2023 05:54	WG2103335
Naphthalene	U		0.00408	0.0200	1	07/29/2023 05:54	WG2103335
Pyrene	U		0.00200	0.00600	1	07/29/2023 05:54	WG2103335
(S) p-Terphenyl-d14	61.4			23.0-120		07/29/2023 05:54	WG2103335
(S) Nitrobenzene-d5	85.7			14.0-149		07/29/2023 05:54	WG2103335
(S) 2-Fluorobiphenyl	51.4			34.0-125		07/29/2023 05:54	WG2103335

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.596		1	07/30/2023 02:01	WG2103035

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/27/2023 10:50	WG2101582

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.00	T8	1	07/26/2023 11:28	WG2101861

Sample Narrative:

L1638228-04 WG2101861: 8 at 23.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	448		10.0	1	07/26/2023 14:43	WG2101751

Sample Narrative:

L1638228-04 WG2101751: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.198	B J	0.0167	0.200	1	08/01/2023 09:32	WG2103038

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.63		0.100	1.00	5	07/30/2023 22:06	WG2102443
Barium	2930		0.608	10.0	20	07/30/2023 23:23	WG2102443
Cadmium	0.182	J	0.0855	1.00	5	07/30/2023 22:06	WG2102443
Copper	8.59		0.132	5.00	5	07/30/2023 22:06	WG2102443
Lead	10.2		0.0990	2.00	5	07/30/2023 22:06	WG2102443
Nickel	7.82		0.197	2.50	5	07/30/2023 22:06	WG2102443
Selenium	0.477	J	0.180	2.50	5	07/30/2023 22:06	WG2102443
Silver	U		0.0865	0.500	5	07/30/2023 22:06	WG2102443
Zinc	33.3		0.740	25.0	5	07/30/2023 22:06	WG2102443

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	0.0307	J	0.0217	0.100	1	07/27/2023 15:24	WG2102835
(S) a,a,a-Trifluorotoluene(FID)	102			77.0-120		07/27/2023 15:24	WG2102835

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	07/26/2023 22:53	WG2102338
Toluene	U		0.00130	0.00500	1	07/26/2023 22:53	WG2102338
Ethylbenzene	U		0.000737	0.00250	1	07/26/2023 22:53	WG2102338
Xylenes, Total	U		0.000880	0.00650	1	07/26/2023 22:53	WG2102338
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/26/2023 22:53	WG2102338
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/26/2023 22:53	WG2102338
(S) Toluene-d8	105			75.0-131		07/26/2023 22:53	WG2102338
(S) 4-Bromofluorobenzene	101			67.0-138		07/26/2023 22:53	WG2102338
(S) 1,2-Dichloroethane-d4	123			70.0-130		07/26/2023 22:53	WG2102338

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	545		16.1	40.0	10	07/31/2023 04:14	WG2103340
C28-C36 Motor Oil Range	1010		2.74	40.0	10	07/31/2023 04:14	WG2103340
(S) o-Terphenyl	62.7			18.0-148		07/31/2023 04:14	WG2103340

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/29/2023 06:14	WG2103335
Anthracene	U		0.00230	0.00600	1	07/29/2023 06:14	WG2103335
Benzo(a)anthracene	U		0.00173	0.00600	1	07/29/2023 06:14	WG2103335
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/29/2023 06:14	WG2103335
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/29/2023 06:14	WG2103335
Benzo(a)pyrene	U		0.00179	0.00600	1	07/29/2023 06:14	WG2103335
Chrysene	U		0.00232	0.00600	1	07/29/2023 06:14	WG2103335
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/29/2023 06:14	WG2103335
Fluoranthene	U		0.00227	0.00600	1	07/29/2023 06:14	WG2103335
Fluorene	U		0.00205	0.00600	1	07/29/2023 06:14	WG2103335
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/29/2023 06:14	WG2103335
1-Methylnaphthalene	U		0.00449	0.0200	1	07/29/2023 06:14	WG2103335
2-Methylnaphthalene	0.00512	UL	0.00427	0.0200	1	07/29/2023 06:14	WG2103335
Naphthalene	U		0.00408	0.0200	1	07/29/2023 06:14	WG2103335
Pyrene	0.00400	UL	0.00200	0.00600	1	07/29/2023 06:14	WG2103335
(S) p-Terphenyl-d14	71.1			23.0-120		07/29/2023 06:14	WG2103335
(S) Nitrobenzene-d5	87.5			14.0-149		07/29/2023 06:14	WG2103335
(S) 2-Fluorobiphenyl	49.2			34.0-125		07/29/2023 06:14	WG2103335

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.816		1	07/30/2023 02:03	WG2103035

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/27/2023 10:55	WG2101582

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.04	T8	1	07/26/2023 11:28	WG2101861

Sample Narrative:

L1638228-05 WG2101861: 8.04 at 23.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	235		10.0	1	07/26/2023 14:43	WG2101751

Sample Narrative:

L1638228-05 WG2101751: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.266		0.0167	0.200	1	08/01/2023 09:35	WG2103038

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.39		0.100	1.00	5	07/30/2023 22:09	WG2102443
Barium	1050		0.304	5.00	10	07/30/2023 23:27	WG2102443
Cadmium	0.273	J	0.0855	1.00	5	07/30/2023 22:09	WG2102443
Copper	10.7		0.132	5.00	5	07/30/2023 22:09	WG2102443
Lead	13.4		0.0990	2.00	5	07/30/2023 22:09	WG2102443
Nickel	8.82		0.197	2.50	5	07/30/2023 22:09	WG2102443
Selenium	0.599	J	0.180	2.50	5	07/30/2023 22:09	WG2102443
Silver	U		0.0865	0.500	5	07/30/2023 22:09	WG2102443
Zinc	45.0		0.740	25.0	5	07/30/2023 22:09	WG2102443

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	0.0466	J	0.0217	0.100	1	07/27/2023 15:43	WG2102835
(S) a,a,a-Trifluorotoluene(FID)	99.1			77.0-120		07/27/2023 15:43	WG2102835

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	07/26/2023 23:12	WG2102338
Toluene	U		0.00130	0.00500	1	07/26/2023 23:12	WG2102338
Ethylbenzene	U		0.000737	0.00250	1	07/26/2023 23:12	WG2102338
Xylenes, Total	U		0.000880	0.00650	1	07/26/2023 23:12	WG2102338
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/26/2023 23:12	WG2102338
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/26/2023 23:12	WG2102338
(S) Toluene-d8	106			75.0-131		07/26/2023 23:12	WG2102338
(S) 4-Bromofluorobenzene	104			67.0-138		07/26/2023 23:12	WG2102338
(S) 1,2-Dichloroethane-d4	120			70.0-130		07/26/2023 23:12	WG2102338

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	59.8		8.05	20.0	5	07/31/2023 04:01	WG2103340
C28-C36 Motor Oil Range	101		1.37	20.0	5	07/31/2023 04:01	WG2103340
(S) o-Terphenyl	69.3			18.0-148		07/31/2023 04:01	WG2103340

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/29/2023 06:33	WG2103335
Anthracene	U		0.00230	0.00600	1	07/29/2023 06:33	WG2103335
Benzo(a)anthracene	U		0.00173	0.00600	1	07/29/2023 06:33	WG2103335
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/29/2023 06:33	WG2103335
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/29/2023 06:33	WG2103335
Benzo(a)pyrene	U		0.00179	0.00600	1	07/29/2023 06:33	WG2103335
Chrysene	U		0.00232	0.00600	1	07/29/2023 06:33	WG2103335
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/29/2023 06:33	WG2103335
Fluoranthene	U		0.00227	0.00600	1	07/29/2023 06:33	WG2103335
Fluorene	0.00227	U	0.00205	0.00600	1	07/29/2023 06:33	WG2103335
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/29/2023 06:33	WG2103335
1-Methylnaphthalene	0.00456	U	0.00449	0.0200	1	07/29/2023 06:33	WG2103335
2-Methylnaphthalene	0.00765	U	0.00427	0.0200	1	07/29/2023 06:33	WG2103335
Naphthalene	U		0.00408	0.0200	1	07/29/2023 06:33	WG2103335
Pyrene	0.00331	U	0.00200	0.00600	1	07/29/2023 06:33	WG2103335
(S) p-Terphenyl-d14	64.3			23.0-120		07/29/2023 06:33	WG2103335
(S) Nitrobenzene-d5	74.2			14.0-149		07/29/2023 06:33	WG2103335
(S) 2-Fluorobiphenyl	40.9			34.0-125		07/29/2023 06:33	WG2103335

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3953599-1 07/27/23 10:16

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

L1638228-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1638228-02 07/27/23 10:34 • (DUP) R3953599-3 07/27/23 10:45

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

Laboratory Control Sample (LCS)

(LCS) R3953599-2 07/27/23 10:24

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.4	104	80.0-120	

L1638240-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638240-01 07/27/23 11:00 • (MS) R3953599-4 07/27/23 11:05 • (MSD) R3953599-5 07/27/23 11:21

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	19.0	20.3	94.9	102	1	75.0-125			6.92	20

L1638240-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1638240-01 07/27/23 11:00 • (MS) R3953599-6 07/27/23 11:26

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	651	U	762	117	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1638231-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1638231-01 07/26/23 11:28 • (DUP) R3952905-2 07/26/23 11:28

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.02	8.10	1	0.993		1

Sample Narrative:

OS: 8.02 at 23.2C

DUP: 8.1 at 23.3C

L1638919-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1638919-03 07/26/23 11:28 • (DUP) R3952905-3 07/26/23 11:28

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.81	7.81	1	0.000		1

Sample Narrative:

OS: 7.81 at 23.2C

DUP: 7.81 at 23.2C

Laboratory Control Sample (LCS)

(LCS) R3952905-1 07/26/23 11:28

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

Sample Narrative:

LCS: 10 at 22.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3952989-1 07/26/23 14:43

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

Sample Narrative:

BLANK: at 25C

L1637948-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1637948-01 07/26/23 14:43 • (DUP) R3952989-3 07/26/23 14:43

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1480	1470	1	0.136		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1638232-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1638232-01 07/26/23 14:43 • (DUP) R3952989-4 07/26/23 14:43

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2870	2860	1	0.314		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3952989-2 07/26/23 14:43

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	732	723	98.8	85.0-115	

Sample Narrative:

LCS: at 25C

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3955286-1 08/01/23 08:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	0.0215	⬇	0.0167	0.200

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

(LCS) R3955286-2 08/01/23 08:50 • (LCSD) R3955286-3 08/01/23 08:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.11	1.10	111	110	80.0-120			0.383	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3954550-1 07/30/23 21:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	0.464	J	0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

Laboratory Control Sample (LCS)

(LCS) R3954550-2 07/30/23 21:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	103	103	80.0-120	
Barium	100	102	102	80.0-120	
Cadmium	100	99.8	99.8	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.7	97.7	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	103	103	80.0-120	
Silver	20.0	20.9	104	80.0-120	
Zinc	100	98.3	98.3	80.0-120	

7
Gl

8
Al

9
Sc

L1637446-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1637446-01 07/30/23 21:32 • (MS) R3954550-5 07/30/23 21:42 • (MSD) R3954550-6 07/30/23 21:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	0.744	92.0	90.2	91.3	89.4	5	75.0-125			2.00	20
Barium	100	80.1	214	198	134	118	5	75.0-125	J5		7.94	20
Cadmium	100	U	107	105	107	105	5	75.0-125			1.93	20
Copper	100	40.8	144	140	103	99.4	5	75.0-125			2.50	20
Lead	100	9.64	121	117	111	107	5	75.0-125			3.13	20
Nickel	100	143	245	230	103	86.8	5	75.0-125			6.63	20
Selenium	100	0.617	103	102	103	101	5	75.0-125			1.25	20
Silver	20.0	U	22.6	22.3	113	111	5	75.0-125			1.51	20
Zinc	100	61.8	167	157	105	95.4	5	75.0-125			5.81	20

Method Blank (MB)

(MB) R3955657-2 07/27/23 13:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3955657-1 07/27/23 12:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.81	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	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) R3954669-3 07/26/23 19:41

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	104			75.0-131
(S) 4-Bromofluorobenzene	97.9			67.0-138
(S) 1,2-Dichloroethane-d4	125			70.0-130

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

(LCS) R3954669-1 07/26/23 18:25 • (LCSD) R3954669-2 07/26/23 18:44

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	0.118	0.116	94.4	92.8	70.0-123			1.71	20
Toluene	0.125	0.115	0.114	92.0	91.2	75.0-121			0.873	20
Ethylbenzene	0.125	0.115	0.115	92.0	92.0	74.0-126			0.000	20
Xylenes, Total	0.375	0.332	0.334	88.5	89.1	72.0-127			0.601	20
1,2,4-Trimethylbenzene	0.125	0.100	0.101	80.0	80.8	70.0-126			0.995	20
1,3,5-Trimethylbenzene	0.125	0.0963	0.0978	77.0	78.2	73.0-127			1.55	20
(S) Toluene-d8				102	101	75.0-131				
(S) 4-Bromofluorobenzene				103	102	67.0-138				
(S) 1,2-Dichloroethane-d4				127	128	70.0-130				

L1638226-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638226-03 07/27/23 02:23 • (MS) R3954669-4 07/27/23 03:00 • (MSD) R3954669-5 07/27/23 03:20

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	10.0	0.270	6.73	8.30	64.6	80.3	80	10.0-149			20.9	37
Toluene	10.0	3.01	12.7	13.3	96.9	103	80	10.0-156			4.62	38
Ethylbenzene	10.0	0.830	8.01	9.35	71.8	85.2	80	10.0-160			15.4	38
Xylenes, Total	30.0	11.2	43.7	44.0	108	109	80	10.0-160			0.684	38
1,2,4-Trimethylbenzene	10.0	4.24	14.6	15.4	104	112	80	10.0-160			5.33	36
1,3,5-Trimethylbenzene	10.0	3.09	11.9	12.8	88.1	97.1	80	10.0-160			7.29	38
(S) Toluene-d8					101	101		75.0-131				
(S) 4-Bromofluorobenzene					101	103		67.0-138				
(S) 1,2-Dichloroethane-d4					125	128		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3954611-1 07/31/23 00:19

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	54.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3954611-2 07/31/23 00:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	30.3	60.6	50.0-150	
(S) o-Terphenyl			61.1	18.0-148	

L1638228-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638228-01 07/31/23 02:03 • (MS) R3954611-3 07/31/23 02:16 • (MSD) R3954611-4 07/31/23 02:29

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	48.0	41.7	39.5	75.2	0.000	70.1	1	50.0-150	J6	J3	62.2	20
(S) o-Terphenyl					44.1	47.2		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3954888-2 07/29/23 04:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	88.0			23.0-120
(S) Nitrobenzene-d5	57.0			14.0-149
(S) 2-Fluorobiphenyl	54.0			34.0-125

Sample Narrative:

BLANK: Surrogate recovery within historical limits.

Laboratory Control Sample (LCS)

(LCS) R3954888-1 07/29/23 03:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0724	90.5	50.0-120	
Anthracene	0.0800	0.0759	94.9	50.0-126	
Benzo(a)anthracene	0.0800	0.0897	112	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0782	97.8	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0757	94.6	49.0-125	
Benzo(a)pyrene	0.0800	0.0764	95.5	42.0-120	
Chrysene	0.0800	0.0793	99.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0811	101	47.0-125	
Fluoranthene	0.0800	0.0796	99.5	49.0-129	
Fluorene	0.0800	0.0800	100	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0929	116	46.0-125	
1-Methylnaphthalene	0.0800	0.0732	91.5	51.0-121	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3954888-1 07/29/23 03:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Methylnaphthalene	0.0800	0.0765	95.6	50.0-120	
Naphthalene	0.0800	0.0722	90.3	50.0-120	
Pyrene	0.0800	0.0794	99.3	43.0-123	
(S) p-Terphenyl-d14			90.9	23.0-120	
(S) Nitrobenzene-d5			87.4	14.0-149	
(S) 2-Fluorobiphenyl			70.9	34.0-125	

L1638220-25 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638220-25 07/29/23 09:29 • (MS) R3954888-3 07/29/23 09:49 • (MSD) R3954888-4 07/29/23 10:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0798	0.0747	0.153	0.208	97.9	168	1	14.0-127		J3 J5	30.5	27
Anthracene	0.0798	U	0.0765	0.0622	95.6	78.5	1	10.0-145			20.6	30
Benzo(a)anthracene	0.0798	0.00231	0.0853	0.0735	104	89.9	1	10.0-139			14.9	30
Benzo(b)fluoranthene	0.0798	0.00248	0.0734	0.0614	88.7	74.4	1	10.0-140			17.8	36
Benzo(k)fluoranthene	0.0798	U	0.0691	0.0572	86.4	72.2	1	10.0-137			18.8	31
Benzo(a)pyrene	0.0798	0.00232	0.0832	0.0688	101	83.9	1	10.0-141			18.9	31
Chrysene	0.0798	U	0.0759	0.0652	94.9	82.3	1	10.0-145			15.2	30
Dibenz(a,h)anthracene	0.0798	U	0.0719	0.0590	89.9	74.5	1	10.0-132			19.7	31
Fluoranthene	0.0798	0.00568	0.0771	0.0720	89.3	83.7	1	10.0-153			6.84	33
Fluorene	0.0798	0.0797	0.172	0.228	115	187	1	11.0-130		J5	28.0	29
Indeno(1,2,3-cd)pyrene	0.0798	U	0.0817	0.0664	102	83.8	1	10.0-137			20.7	32
1-Methylnaphthalene	0.0798	1.06	1.80	2.59	925	1930	1	10.0-142	V	J3 V V3	36.0	28
2-Methylnaphthalene	0.0798	1.44	2.49	3.74	1310	2900	1	10.0-137	V	J3 V V3	40.1	28
Naphthalene	0.0798	0.977	1.45	2.90	591	2430	1	10.0-135	V	J3 V V3	66.7	27
Pyrene	0.0798	0.00619	0.0759	0.0715	87.1	82.5	1	10.0-148			5.97	35
(S) p-Terphenyl-d14					83.1	70.0		23.0-120				
(S) Nitrobenzene-d5					0.000	0.000		14.0-149	J2	J2		
(S) 2-Fluorobiphenyl					69.3	71.4		34.0-125				

Sample Narrative:

OS: Surrogate failure due to matrix interference.

MS: Surrogate failure due to matrix interference.

MSD: Surrogate failure due to matrix interference.

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.

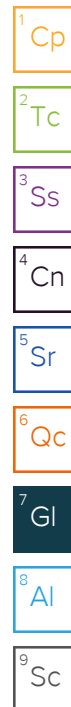
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.
V3	The internal standard exhibited poor recovery due to sample matrix interference. The analytical results will be biased high. BDL results will be unaffected.



ACCREDITATIONS & LOCATIONS

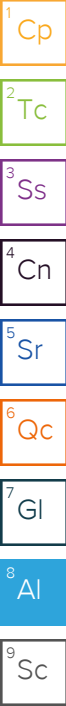
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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
-------	------------------------

LI 058028

Tracking Numbers			Temperature		
5882	7564	6699	GBA6	4.840	4.8
5892	7564	6703	GBA6	5.200	5.2

Caerus Oil and Gas

Sample Delivery Group: L1638231
Samples Received: 07/22/2023
Project Number: L9
Description: L9 Facility Decommissioning
Site: L9
Report To: Jake J / Blair R / Brett M
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20230720-L9-(STOCK) L1638231-01 Solid

Collected by
Ben Herrmann

Collected date/time
07/20/23 12:15

Received date/time
07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2103035	1	07/30/23 02:06	07/30/23 02:06	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2101481	1	07/26/23 00:29	07/26/23 16:02	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2101861	1	07/26/23 09:51	07/26/23 11:28	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2101751	1	07/26/23 12:00	07/26/23 14:43	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2103038	1	07/27/23 16:46	08/01/23 09:37	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	5	07/27/23 02:51	07/30/23 22:13	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2102443	50	07/27/23 02:51	07/30/23 23:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2102835	1	07/26/23 11:05	07/27/23 16:19	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2102338	1	07/26/23 11:05	07/26/23 23:31	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2103340	1	07/29/23 13:31	07/31/23 03:36	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2103336	1	07/28/23 21:13	07/29/23 15:58	AGW	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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.774		1	07/30/2023 02:06	WG2103035

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/26/2023 16:02	WG2101481

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.02	T8	1	07/26/2023 11:28	WG2101861

Sample Narrative:

L1638231-01 WG2101861: 8.02 at 23.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	314		10.0	1	07/26/2023 14:43	WG2101751

Sample Narrative:

L1638231-01 WG2101751: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.263		0.0167	0.200	1	08/01/2023 09:37	WG2103038

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.45		0.100	1.00	5	07/30/2023 22:13	WG2102443
Barium	6330		1.52	25.0	50	07/30/2023 23:30	WG2102443
Cadmium	0.467	J	0.0855	1.00	5	07/30/2023 22:13	WG2102443
Copper	12.1		0.132	5.00	5	07/30/2023 22:13	WG2102443
Lead	11.4		0.0990	2.00	5	07/30/2023 22:13	WG2102443
Nickel	8.22		0.197	2.50	5	07/30/2023 22:13	WG2102443
Selenium	0.462	J	0.180	2.50	5	07/30/2023 22:13	WG2102443
Silver	U		0.0865	0.500	5	07/30/2023 22:13	WG2102443
Zinc	43.6		0.740	25.0	5	07/30/2023 22:13	WG2102443

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	0.0354	J	0.0217	0.100	1	07/27/2023 16:19	WG2102835
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		07/27/2023 16:19	WG2102835

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	07/26/2023 23:31	WG2102338
Toluene	U		0.00130	0.00500	1	07/26/2023 23:31	WG2102338
Ethylbenzene	U		0.000737	0.00250	1	07/26/2023 23:31	WG2102338
Xylenes, Total	U		0.000880	0.00650	1	07/26/2023 23:31	WG2102338
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/26/2023 23:31	WG2102338
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/26/2023 23:31	WG2102338
(S) Toluene-d8	107			75.0-131		07/26/2023 23:31	WG2102338
(S) 4-Bromofluorobenzene	101			67.0-138		07/26/2023 23:31	WG2102338
(S) 1,2-Dichloroethane-d4	123			70.0-130		07/26/2023 23:31	WG2102338

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	81.6		1.61	4.00	1	07/31/2023 03:36	WG2103340
C28-C36 Motor Oil Range	125		0.274	4.00	1	07/31/2023 03:36	WG2103340
(S) o-Terphenyl	43.2			18.0-148		07/31/2023 03:36	WG2103340

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	07/29/2023 15:58	WG2103336
Anthracene	U		0.00230	0.00600	1	07/29/2023 15:58	WG2103336
Benzo(a)anthracene	U		0.00173	0.00600	1	07/29/2023 15:58	WG2103336
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/29/2023 15:58	WG2103336
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/29/2023 15:58	WG2103336
Benzo(a)pyrene	U		0.00179	0.00600	1	07/29/2023 15:58	WG2103336
Chrysene	U		0.00232	0.00600	1	07/29/2023 15:58	WG2103336
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/29/2023 15:58	WG2103336
Fluoranthene	U		0.00227	0.00600	1	07/29/2023 15:58	WG2103336
Fluorene	U		0.00205	0.00600	1	07/29/2023 15:58	WG2103336
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/29/2023 15:58	WG2103336
1-Methylnaphthalene	0.0101	U	0.00449	0.0200	1	07/29/2023 15:58	WG2103336
2-Methylnaphthalene	0.0249		0.00427	0.0200	1	07/29/2023 15:58	WG2103336
Naphthalene	0.00680	U	0.00408	0.0200	1	07/29/2023 15:58	WG2103336
Pyrene	0.00336	U	0.00200	0.00600	1	07/29/2023 15:58	WG2103336
(S) p-Terphenyl-d14	69.6			23.0-120		07/29/2023 15:58	WG2103336
(S) Nitrobenzene-d5	77.7			14.0-149		07/29/2023 15:58	WG2103336
(S) 2-Fluorobiphenyl	61.7			34.0-125		07/29/2023 15:58	WG2103336

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3953107-1 07/26/23 13:45

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

L1637996-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1637996-04 07/26/23 14:24 • (DUP) R3953107-3 07/26/23 14:29

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

L1637996-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1637996-09 07/26/23 15:05 • (DUP) R3953107-4 07/26/23 15:11

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

Laboratory Control Sample (LCS)

(LCS) R3953107-2 07/26/23 13:53

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	11.1	111	80.0-120	

L1638303-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638303-01 07/26/23 16:07 • (MS) R3953107-5 07/26/23 16:12 • (MSD) R3953107-6 07/26/23 16:17

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	2.31	23.2	23.0	104	104	1	75.0-125			0.684	20

L1638303-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1638303-01 07/26/23 16:07 • (MS) R3953107-7 07/26/23 16:34

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	2.31	795	124	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1638231-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1638231-01 07/26/23 11:28 • (DUP) R3952905-2 07/26/23 11:28

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.02	8.10	1	0.993		1

Sample Narrative:

OS: 8.02 at 23.2C

DUP: 8.1 at 23.3C

L1638919-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1638919-03 07/26/23 11:28 • (DUP) R3952905-3 07/26/23 11:28

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.81	7.81	1	0.000		1

Sample Narrative:

OS: 7.81 at 23.2C

DUP: 7.81 at 23.2C

Laboratory Control Sample (LCS)

(LCS) R3952905-1 07/26/23 11:28

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

Sample Narrative:

LCS: 10 at 22.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3952989-1 07/26/23 14:43

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

Sample Narrative:

BLANK: at 25C

L1637948-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1637948-01 07/26/23 14:43 • (DUP) R3952989-3 07/26/23 14:43

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1480	1470	1	0.136		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1638232-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1638232-01 07/26/23 14:43 • (DUP) R3952989-4 07/26/23 14:43

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2870	2860	1	0.314		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3952989-2 07/26/23 14:43

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	732	723	98.8	85.0-115	

Sample Narrative:

LCS: at 25C

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3955286-1 08/01/23 08:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	0.0215	⬇	0.0167	0.200

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3955286-2 08/01/23 08:50 • (LCSD) R3955286-3 08/01/23 08:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.11	1.10	111	110	80.0-120			0.383	20

Method Blank (MB)

(MB) R3954550-1 07/30/23 21:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	0.464	J	0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3954550-2 07/30/23 21:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	103	103	80.0-120	
Barium	100	102	102	80.0-120	
Cadmium	100	99.8	99.8	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.7	97.7	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	103	103	80.0-120	
Silver	20.0	20.9	104	80.0-120	
Zinc	100	98.3	98.3	80.0-120	

L1637446-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1637446-01 07/30/23 21:32 • (MS) R3954550-5 07/30/23 21:42 • (MSD) R3954550-6 07/30/23 21:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	0.744	92.0	90.2	91.3	89.4	5	75.0-125			2.00	20
Barium	100	80.1	214	198	134	118	5	75.0-125	J5		7.94	20
Cadmium	100	U	107	105	107	105	5	75.0-125			1.93	20
Copper	100	40.8	144	140	103	99.4	5	75.0-125			2.50	20
Lead	100	9.64	121	117	111	107	5	75.0-125			3.13	20
Nickel	100	143	245	230	103	86.8	5	75.0-125			6.63	20
Selenium	100	0.617	103	102	103	101	5	75.0-125			1.25	20
Silver	20.0	U	22.6	22.3	113	111	5	75.0-125			1.51	20
Zinc	100	61.8	167	157	105	95.4	5	75.0-125			5.81	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3955657-2 07/27/23 13:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3955657-1 07/27/23 12:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.81	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3954669-3 07/26/23 19:41

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	104			75.0-131
(S) 4-Bromofluorobenzene	97.9			67.0-138
(S) 1,2-Dichloroethane-d4	125			70.0-130

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

(LCS) R3954669-1 07/26/23 18:25 • (LCSD) R3954669-2 07/26/23 18:44

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	0.118	0.116	94.4	92.8	70.0-123			1.71	20
Toluene	0.125	0.115	0.114	92.0	91.2	75.0-121			0.873	20
Ethylbenzene	0.125	0.115	0.115	92.0	92.0	74.0-126			0.000	20
Xylenes, Total	0.375	0.332	0.334	88.5	89.1	72.0-127			0.601	20
1,2,4-Trimethylbenzene	0.125	0.100	0.101	80.0	80.8	70.0-126			0.995	20
1,3,5-Trimethylbenzene	0.125	0.0963	0.0978	77.0	78.2	73.0-127			1.55	20
(S) Toluene-d8				102	101	75.0-131				
(S) 4-Bromofluorobenzene				103	102	67.0-138				
(S) 1,2-Dichloroethane-d4				127	128	70.0-130				

L1638226-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638226-03 07/27/23 02:23 • (MS) R3954669-4 07/27/23 03:00 • (MSD) R3954669-5 07/27/23 03:20

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	10.0	0.270	6.73	8.30	64.6	80.3	80	10.0-149			20.9	37
Toluene	10.0	3.01	12.7	13.3	96.9	103	80	10.0-156			4.62	38
Ethylbenzene	10.0	0.830	8.01	9.35	71.8	85.2	80	10.0-160			15.4	38
Xylenes, Total	30.0	11.2	43.7	44.0	108	109	80	10.0-160			0.684	38
1,2,4-Trimethylbenzene	10.0	4.24	14.6	15.4	104	112	80	10.0-160			5.33	36
1,3,5-Trimethylbenzene	10.0	3.09	11.9	12.8	88.1	97.1	80	10.0-160			7.29	38
(S) Toluene-d8					101	101		75.0-131				
(S) 4-Bromofluorobenzene					101	103		67.0-138				
(S) 1,2-Dichloroethane-d4					125	128		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3954611-1 07/31/23 00:19

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	54.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3954611-2 07/31/23 00:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	30.3	60.6	50.0-150	
(S) o-Terphenyl			61.1	18.0-148	

L1638228-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638228-01 07/31/23 02:03 • (MS) R3954611-3 07/31/23 02:16 • (MSD) R3954611-4 07/31/23 02:29

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	48.0	41.7	39.5	75.2	0.000	70.1	1	50.0-150	J6	J3	62.2	20
(S) o-Terphenyl					44.1	47.2		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3954909-2 07/29/23 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	78.7			23.0-120
(S) Nitrobenzene-d5	49.4			14.0-149
(S) 2-Fluorobiphenyl	53.8			34.0-125

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3954909-1 07/29/23 10:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0552	69.0	50.0-120	
Anthracene	0.0800	0.0582	72.8	50.0-126	
Benzo(a)anthracene	0.0800	0.0614	76.8	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0582	72.8	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0574	71.8	49.0-125	
Benzo(a)pyrene	0.0800	0.0536	67.0	42.0-120	
Chrysene	0.0800	0.0600	75.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0592	74.0	47.0-125	
Fluoranthene	0.0800	0.0603	75.4	49.0-129	
Fluorene	0.0800	0.0583	72.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0635	79.4	46.0-125	
1-Methylnaphthalene	0.0800	0.0555	69.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0581	72.6	50.0-120	
Naphthalene	0.0800	0.0576	72.0	50.0-120	
Pyrene	0.0800	0.0579	72.4	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3954909-1 07/29/23 10:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			72.5	23.0-120	
(S) Nitrobenzene-d5			62.2	14.0-149	
(S) 2-Fluorobiphenyl			58.0	34.0-125	

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.

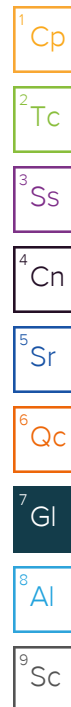
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



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.



[illegible]

LI88231

Tracking Numbers			Temperature		
5882	7564	6699	COAL	4.840	4.8
5882	7564	6703	COAL	5.200	5.2