



VIA ELECTRONIC MAIL –

September 21, 2022

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

**Subject: Report of Work Completed
 Confirmation Sampling
 PCU T73-11G
 Piceance Creek
 Rio Blanco, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Oil and Gas LLC (Caerus), completed a good faith due diligence investigation associated with two abandoned historic earthen production pits (Facility ID:117250), and pre-flowline infrastructure decommissioning at the USA PICEANCE CREEK-62S97W/11SENE (PCU T73-11G) (Location ID: 315260) pad location (Site) under Remediation Number 22200. Good faith pit confirmation sampling was performed at the north and south pit locations and based on sampling results, subsequent drilling assessment activities were performed at the southern pit location and completed pursuant to the Colorado Oil and Gas Conservation Commission (COGCC) Rule 913.c.(1): *Pit or Cuttings Trench closure*. The pre-flowline infrastructure decommissioning soil sampling was performed pursuant to COGCC Rule 913.c.(9): *Decommissioning of Oil and Gas Facilities*. The Site is located in the Caerus' Piceance Creek area of operation in Rio Blanco, Colorado (Figure 1).

SOIL SAMPLING ACTIVITIES – T73-11G

On May 9, 2022, WSP personnel completed soil screening and confirmation soil sampling activities associated with two (north and south) abandoned historic earthen production pits (Facility ID:117250) located at the Site. Empire Location Services LLC of Grand Junction, Colorado was contracted by Caerus for hydro-vacuum (hydro-vac) services to assist in the collection of confirmation soil samples from the pad surface of the Site. Using the hydro-vac, a total of two potholes were advanced on the pad, one within the center of each historic earthen pit footprint. During advancement of each pothole, a hand auger was used to collect soil from the base of the pothole which was subsequently screened at 2 feet below ground surface (bgs) and 4 feet bgs. The soil screening and sampling activities were conducted by a WSP geologist who inspected the soil for the presence or absence of petroleum hydrocarbon odor/staining. The soil was characterized by visual and olfactory observations along with field screening the soil using a photoionization detector (PID) to monitor for the presence or absence of volatile organic vapors in the soil headspace. The soil screening results are summarized in Table 1. Based on field observations by the geologist, only the terminus sample from each pothole location was collected for laboratory submittal. The 4-foot bgs samples were selected for submittal based on the historic earthen pit construction permits (Facility ID:117250) as the permitted pit depths were 4 feet bgs.

On May 23, 2022, WSP personnel returned to the Site to perform confirmation soil sampling for the planned decommissioning of flowline infrastructure associated with the decommissioned UIC DISPOSAL well. Western Slope Oil Field Services, Inc (WCO) of Rifle, Colorado was contracted by Caerus to provide hydro-vac services to assist with the pre-flowline decommissioning confirmation soil sampling. Using the hydro-vac, a total of two

WSP USA
820 MEGAN AVENUE, UNIT B
RIFLE CO 81650

Tel.: 970-285-9985
wsp.com



potholes were advanced within the manway, one at each end of the flowline to be abandoned where the flowline transitions from above ground to below ground. Sandstone bedrock was encountered in the pothole at the western end of the flowline at approximately 5 feet bgs. Therefore, only one of the two-flowline abandonment confirmation soil samples were collected. Flowline abandonment confirmation soil sample 20220523-T73-11G (POC-FL01) @ 8' was collected at an approximately 8 feet bgs below the eastern manway closest to the Site. The soil was characterized as described above. The confirmation soil sample locations along with the attempted flowline confirmation soil sample location from the western manway are shown on Figure 2.

On August 11 and 12, 2022, WSP returned to the Site and performed an investigative drilling assessment to further delineate sodium absorption ratio (SAR) exceedances identified during the initial investigative sampling event associated with the southern pit (Facility ID:117250). The investigative drilling activities were completed with assistance of Colorado Drilling and Sampling using a tire mounted SIMCO 2800 drill rig equipped with solid stem auger and air coring capabilities. Prior to drilling activities, all proposed boring locations located on the working pad surface (five) were cleared for underground utilities with a hydro-vac by WCO to depths ranging from 2 feet bgs to 8 feet bgs. A total of five assessment borings were advanced by CD&S to depths ranging from 13 feet bgs to 17 feet bgs as shown on Figure 3. The five assessment borings were advanced at locations as follows; S.PIT-C was advanced within center of the former pit, and borings S.PIT-N, S.PIT-E, S.PIT-S, and S. PIT-W were advanced approximately 15 feet in each cardinal direction of the former pit location (Figure 3). Drilling oversight, soil sampling, and field screening activities were conducted by a WSP geologist who screened each borehole at five-foot intervals and inspected for the presence or absence of petroleum hydrocarbons odor and/or staining. Soil was characterized utilizing the United Soil Classification System by visually inspecting the soil samples and field screening the soil head space using a photoionization detector to monitor for the presence or absence of volatile organic compounds. Discrete soil samples from all borings were collected and submitted at each five-foot interval to boring terminus.

All confirmation soil samples were collected in clean laboratory-prepared containers submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis of constituents listed in the COGCC Table 915-1 suite. A photolog depicting the sampling locations area is included in Enclosure A. The soil borings logs are included in Enclosure B.

ANALYTICAL RESULTS– T73-11G

Laboratory analytical results of the two historic earthen pit confirmation soil samples [20220509-T73-11G(PIT-N)@ 4' and 20220509-T73-11G(PIT-S)@ 4'] collected on May 9, 2022 at the base of each of the former pit production footprint at the PCU T73-11G location indicated exceedances of COGCC Table 915-1 Residential Soil Screening Level Concentrations (RSSLC) for arsenic. Concentrations of arsenic in the two above mentioned samples were 4.24 milligrams per kilogram (mg/kg) and 7.10 mg/kg, respectively. All other analytes were either below the laboratory detection limit or within COGCC Table 915-1 RSSLC. The two historic earthen pit confirmation soil samples exceeded the COGCC 915-1 Clean-up Concentration (CC) for pH with values of 8.41 standard unit (SU) and 9.03 SU. Additionally, earthen pit confirmation soil sample 20220509-T73-11G(PIT-S)@ 4' exceeded the COGCC Table 915-1 CC for sodium adsorption ratio (SAR) with a value of 10.2. Due to the elevated arsenic and SAR concentrations observed in pit confirmation soil sample 20220509-T73-11G(PIT-S)@ 4', these two analytes were re-analyzed by the laboratory (Pace). Following re-analyzation, both samples still exceeded the COGCC Table 915-1 under classifications RSSLC and CC with concentrations of 5.56 mg/kg and 8.84, respectively.

Laboratory analytical results of the one flowline confirmation soil sample [20220523-T73-11G (POC-FL01) @ 8'] collected the Site on May 29, 2022 exceeded the COGCC Table 915-1 RSSLC for arsenic with a concentration of 5.15 mg/kg. All other analytes were either below the laboratory detection limit or within COGCC Table 915-1 RSSLC. The flowline confirmation soil sample also exceeded the COGCC 915-1 CC for pH and SAR with values of 8.58 SU and 10.6, respectively.

Laboratory analytical results of the southern pit investigative soil samples collected on August 11 and 12, 2022, indicate all 12 investigative soil boring samples exceeded the COGCC Table 915-1 RSSLC for arsenic. Arsenic concentrations ranged from 2.28 mg/kg in investigative soil boring sample 20220811-T73-11G (S. PIT-C) @ 15-17' to 6.85 mg/kg in investigative soil boring sample 20220811-T73-11G(S. PIT-S)@7-9'.



All 12 investigative soil boring samples exceeded the COGCC Table 915-1 CC for pH with values ranging from 8.41 SU in investigative soil boring sample 20220811-T73-11G (S. PIT-C) @ 15-17' to 9.61 SU in investigative soil boring sample 20220812-T73-11G-(S. PIT-E) @ 5-7'.

Eight of the twelve investigative soil boring samples exceeded the COGCC Table 915-1 CC for SAR with values ranging from 7.39 in investigative soil boring sample 20220811-T73-11G (S. PIT-C) @ 9-11' to 15.4 in investigative soil boring sample 20220812-T73-11G-(S. PIT-N) @ 10-12'. All remaining analytes were either below laboratory detection limits or within COGCC Table 9-15-1 RSSLC.

The laboratory results are included in Enclosure C and summarized in Table 2.

CONCLUSIONS– T73-11G

Based on the analytical data provided for the initial historic earthen pit (north and south) sampling, subsequent drilling assessment of the south pit, and pre-flowline infrastructure decommissioning investigations, there are remaining COGCC Table 915-1 exceedances of arsenic, pH, and SAR in the subsurface at the Site.

WSP recommends that Caerus request the Director to evaluate the negligible SAR exceedances associated with the historic earthen south pit and flowline to be abandoned under COGCC Rule 915.e.2(C). This request is due to the fact that all 14 SAR exceedances with respect to the COGCC Table 915-1 CCs are within background concentrations found at the nearby pad location PICEANCE CREEK UNIT-62S97W3NESE (PCU T75X-3G1) (Facility ID: 335695). Although these soil samples were collected from a geographical distance range of 1.18 to 1.41 miles from two separate boring locations northwest of the Site, the soils at the PCU T75X-3G1 are representative of the same soil complex - Redcreek-Rentsac per *COGCC GISOnline Soil Survey (NRCS)* as the Site. All of the 14 elevated SAR values at the Site with respect to the COGCC Table 915-1 should be considered naturally occurring within the local area and corresponding soil complex. The geographic proximity of the two locations is depicted on Figure 4 along with the associated background sample locations. A geographic proximity analytical map is depicted on Figure 5. The analytical data for the samples are summarized in Table 1, and the analytical reports are included in Enclosure C.

To address the elevated arsenic concentrations that exceed the COGCC Table 915-1 RSSLCs, WSP recommends that Caerus request the Director to evaluate the exceedances per COGCC Table 915-1 footnote 11 (1.25X background concentrations for metals). Caerus should request that all 15-confirmation soil sample arsenic exceedances be considered within background concentrations observed in background soil sample BACKGROUND 6 found at the PICEANCE CREEK UNIT-62S97W11NESE (PCU 297-11A) (Location ID: 335946) located immediately southeast of the Site (0.16 miles). The arsenic concentration of background soil sample BACKGROUND 6 (6.5 mg/kg) is within 1.25X of all 15-confirmation soil samples collected at the Site. Caerus should request that all arsenic exceedances within 1.25X of background levels be considered naturally occurring. These background samples located at the PCU 297-11A are representative of the same soil complex - Redcreek-Rentsac per *COGCC GISOnline Soil Survey (NRCS)* as the Site. The geographic proximity of the two locations is depicted on Figure 6 along with the associated background sample locations. A geographic proximity analytical map is depicted on Figure 7. The analytical data for the samples are summarized in the enclosed Table 1, and the analytical reports are included in Enclosure C.

WSP also recommends that Caerus request the Director to consider the pH values observed in the above-mentioned confirmation soil samples as representative of background. The elevated pH values in all investigative soil samples should be evaluated as naturally occurring. Although these 15 pH values range from 8.41 to 9.61 and are elevated with respect to the COGCC Table 915-1 CC max range of 8.3, these elevated values should not be considered elevated as a result of the leachate of historic production pit water and/or production water. Based on produced water quality data collected from the Black Sulfur Facility (BSF) which receives produced water from the PCU T73-11G location, the soil pH value is greater than the produced water pH value generated at the Site. The pH value of produced water sample collected at from the outlet at the BSF collected on September 14, 2021, was 6.81. Additionally, based on the Operator's (Caerus's) knowledge (see Enclosure D), in general, the source of impact at the base of the two former historic pits and flowline locations is not directly correlated to the produced water. No



organic impacts were observed when completing confirmation soil sampling. The pH value collected from produced water at the BSF would indicate that a prolonged produced water drip into these pits from former production equipment or the release from a flowline would not effectively increase the pH above the COGCC Table 915-1 CC of 8.3. Based on the pH value of the produced water sample, WSP and Caerus believe the pH elevated values in the confirmation soils samples are not associated with the two historic earthen production pits or flowline and are not a result of oil and gas production activities but are rather naturally occurring background concentrations within the area.

Based on the data provided herein, WSP recommends that Caerus request a “No Further Action” designation under this remediation project associated with the two historic earthen pit locations (Facility ID:117250) (COGCC Remediation Number 22200) at the PICEANCE CREEK-62S97W/11SENE (Location ID: 315260). This recommendation is based on the reasonings stated below.

- No hydrocarbon impacts were observed when completing the decommissioning investigation activities; and
- All inorganic identified exceedances under COGCC Table 915-1 CCs are within background values within the location area.

The one (1) wellhead flowline designation associated with the former disposal well [UIC DISPOSAL (Facility ID: 159164) API Number 103-08181] will be closed under a separate Form 27 submittal once the flowline is removed and additional screening occurs to confirm for the presence or absence of impacts to soil.

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

Kind regards,

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

Dustin Held
Sr. Consultant, Environmental Geologist

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

Parker Coit, P.G.
Sr. Consultant, Geologist

Encl.

FIGURES

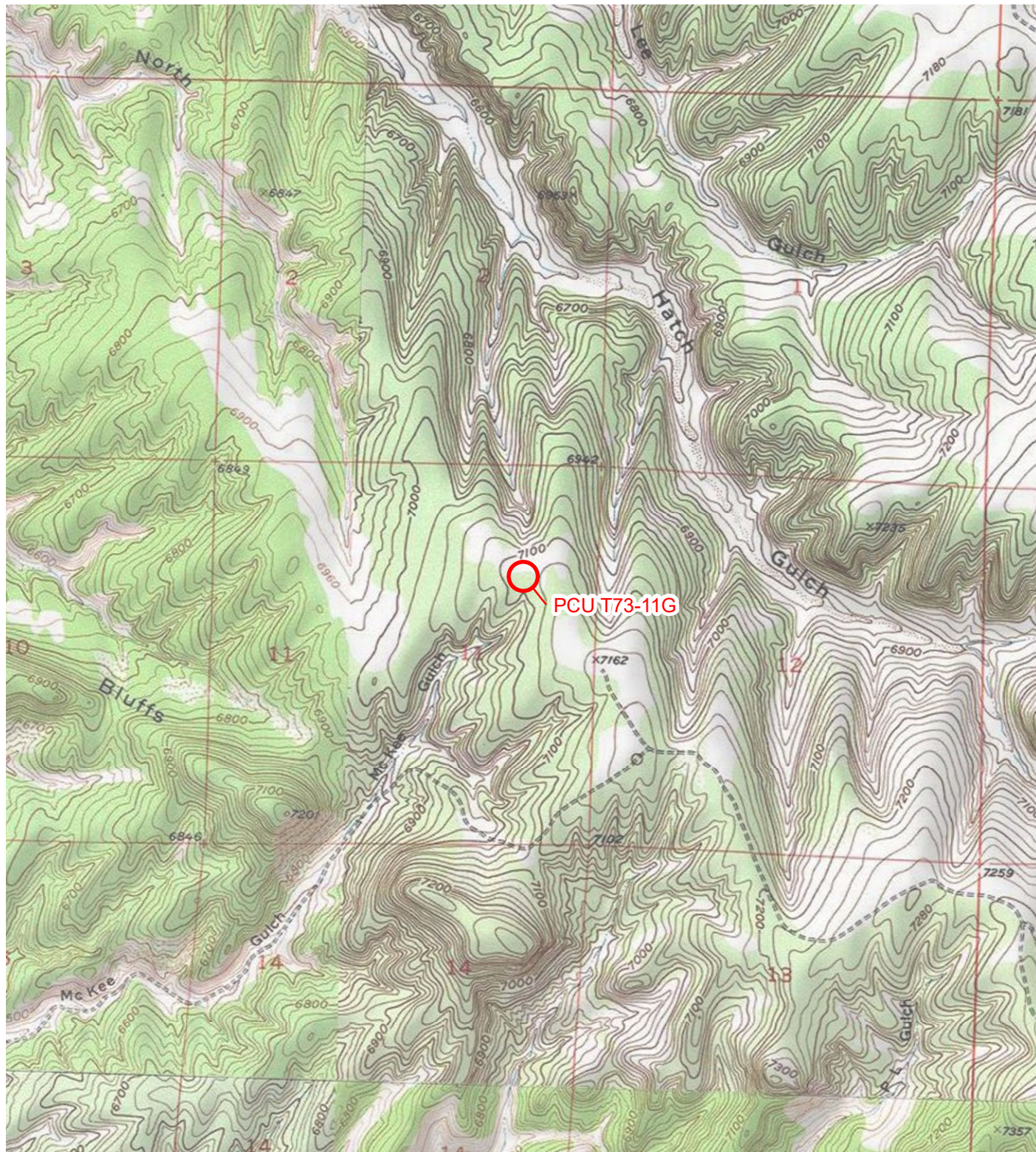


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

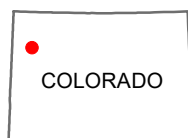
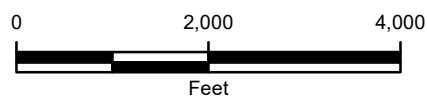


FIGURE 1
SITE LOCATION MAP
PCU T73-11G
SENE SEC 11-T2S-R97W
RIO BLANCO COUNTY, COLORADO
CAERUS OIL AND GAS LLC





IMAGE COURTESY OF ESRI (MAXAR 11/4/2020)

LEGEND

- SOIL SAMPLE
- ATTEMPTED FLOWLINE ABANDONMENT
CONFIRMATION SOIL SAMPLE LOCATION
- WELLHEAD

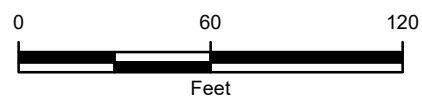


FIGURE 2
SITE MAP
PCU T73-11G
SENE SEC 11-T2S-R97W
RIO BLANCO COUNTY, COLORADO
CAERUS OIL AND GAS, LLC





IMAGE COURTESY OF ESRI (MAXAR 11/4/2020)

LEGEND



SOIL BORING



APPROXIMATE HISTORICAL
PIT BOUNDARY (10' x 10')

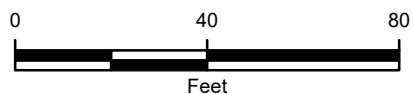
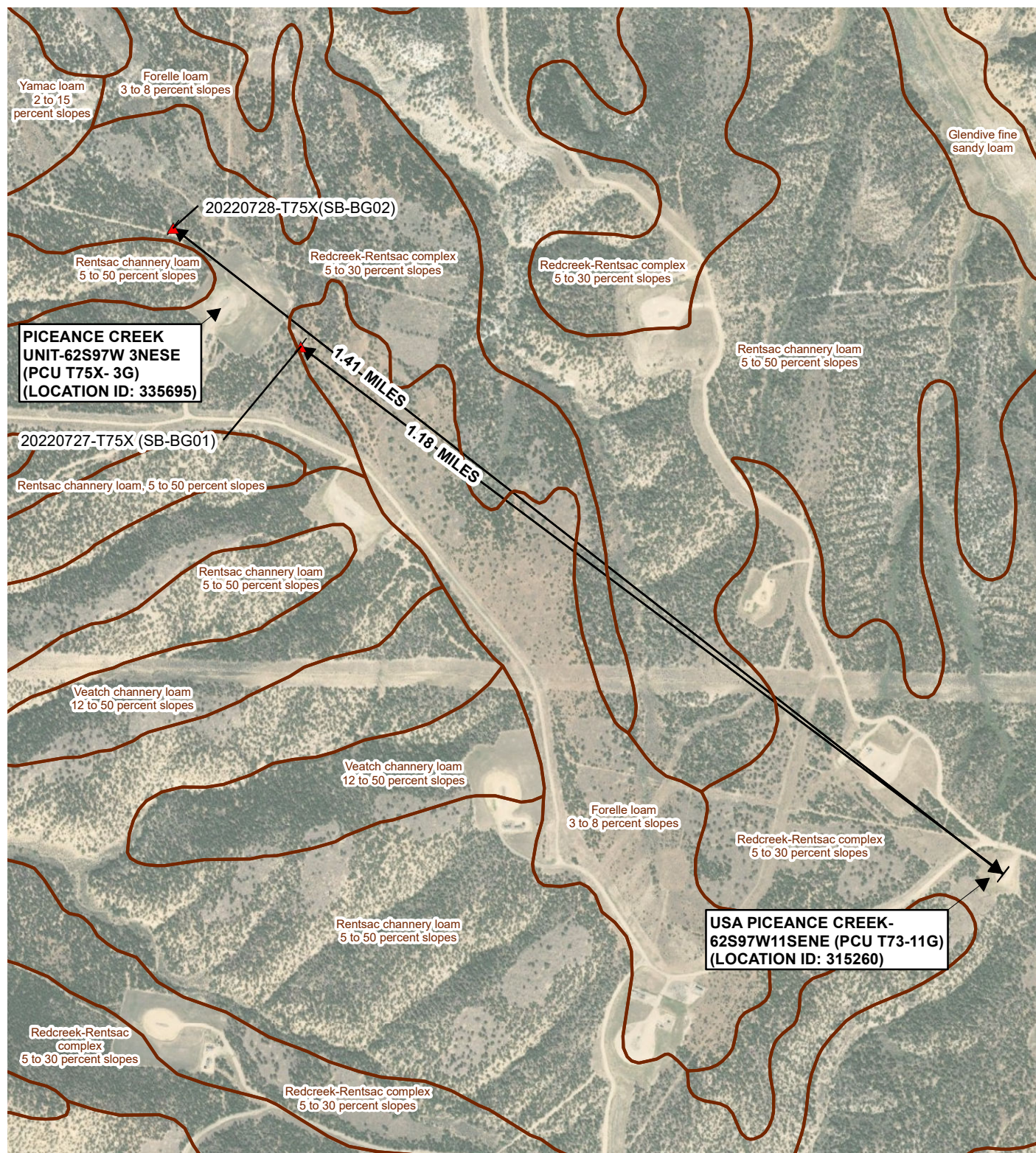


FIGURE 3
SAMPLE LOCATION MAP
PCU T73-11G
SENE SEC 11-T2S-R97W
RIO BLANCO COUNTY, COLORADO
CAERUS OIL AND GAS, LLC





LEGEND

- ▲ BACKGROUND SOIL SAMPLE
- ⬮ SSURGO SOILS

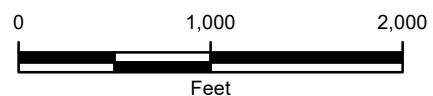


FIGURE 4
GEOGRAPHIC PROXIMITY LOCATION MAP
PCU T73-11G
SENE SEC 11-T2S-R97W
RIO BLANCO COUNTY, COLORADO
CAERUS OIL AND GAS, LLC



SSURGO: SOIL SURVEY GEOGRAPHIC DATABASE

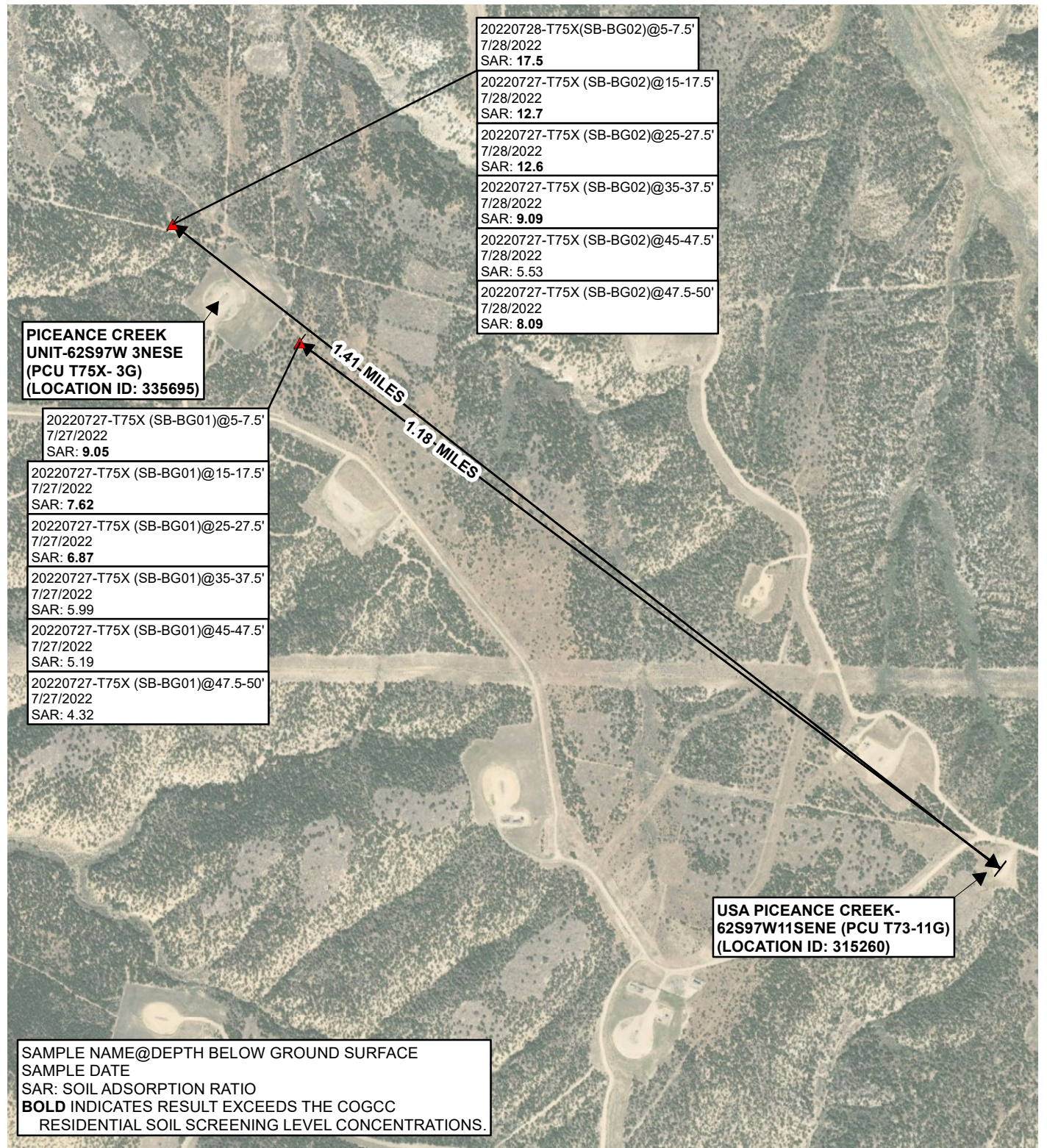


IMAGE COURTESY OF ESRI (MAXAR 11/4/2020)

LEGEND

▲ BACKGROUND SOIL SAMPLE

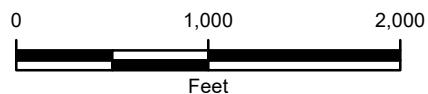


FIGURE 5
GEOGRAPHIC PROXIMITY ANALYTICAL MAP
PCU T73-11G
SENE SEC 11-T2S-R97W
RIO BLANCO COUNTY, COLORADO
CAERUS OIL AND GAS, LLC



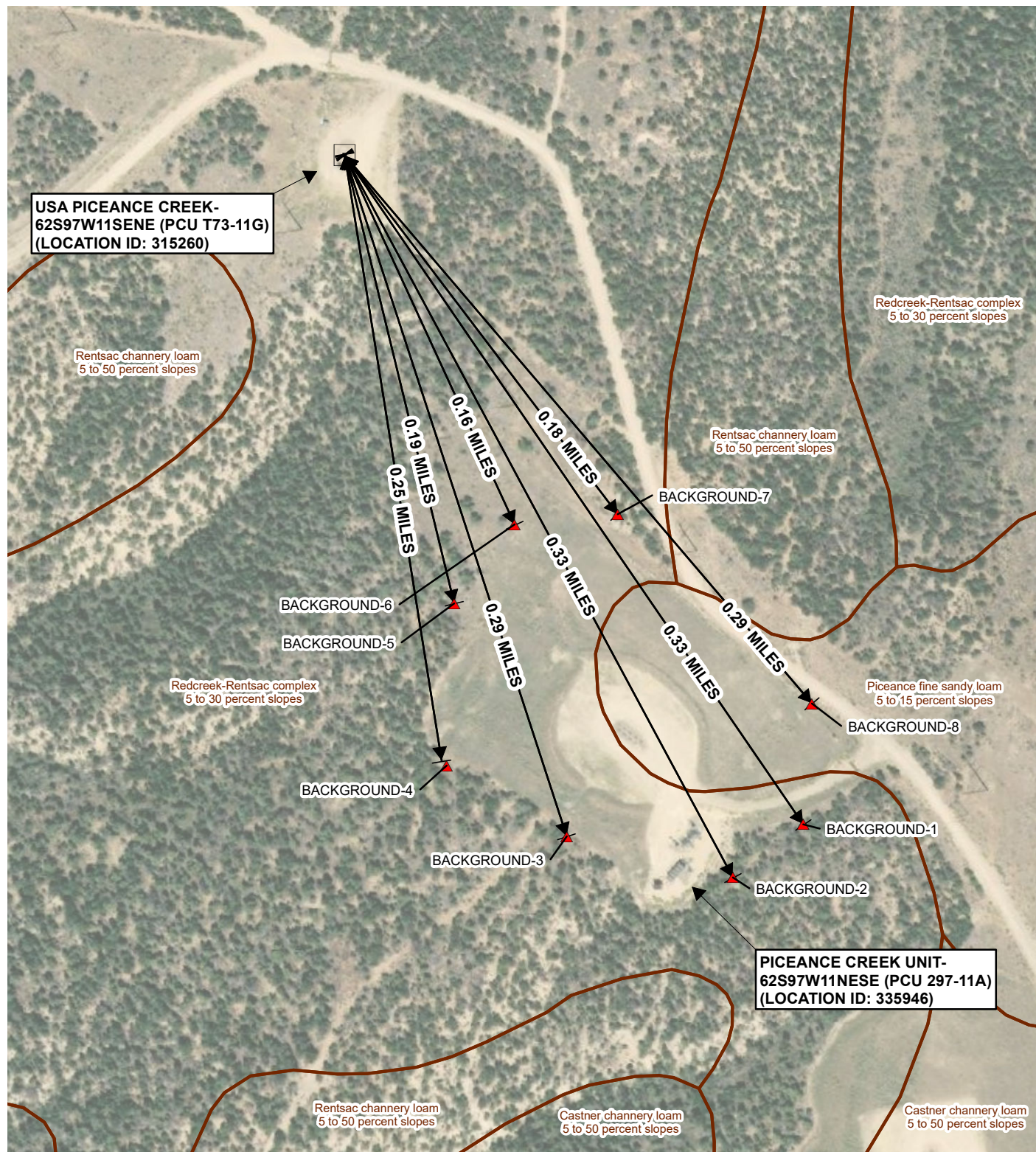


IMAGE COURTESY OF ESRI (MAXAR 11/4/2020)

LEGEND

- ▲ BACKGROUND SOIL SAMPLE
- SSURGO SOILS

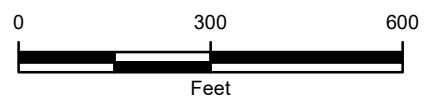
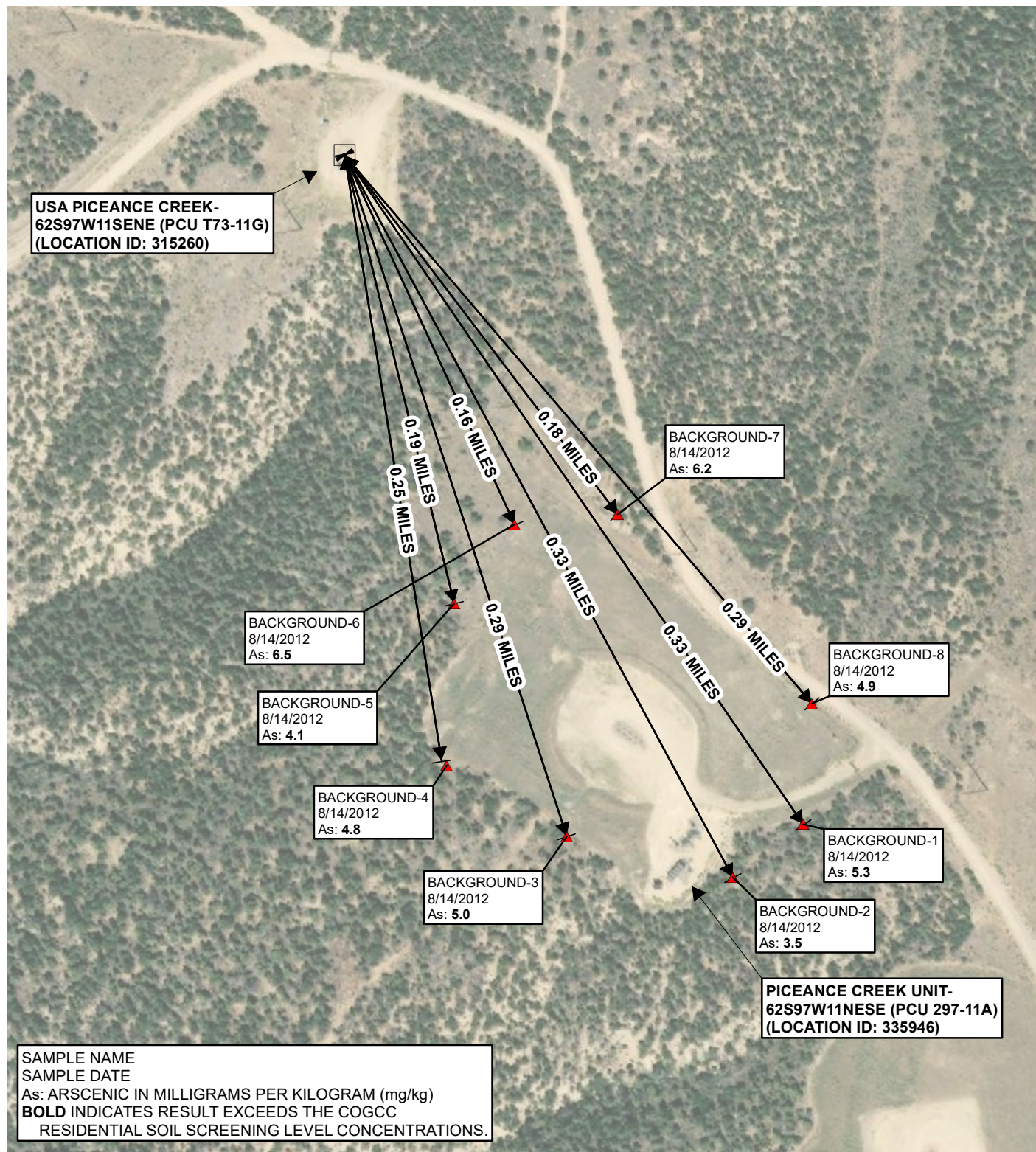


FIGURE 6
GEOGRAPHIC PROXIMITY LOCATION MAP
 PCU T73-11G
 SENE SEC 11-T2S-R97W
 RIO BLANCO COUNTY, COLORADO
 CAERUS OIL AND GAS, LLC



SSURGO: SOIL SURVEY GEOGRAPHIC DATABASE



LEGEND

▲ BACKGROUND SOIL SAMPLE

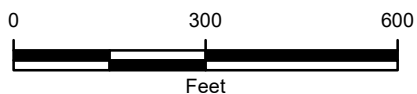


FIGURE 7
GEOGRAPHIC PROXIMITY LOCATION MAP
PCU T73-11G
SENE SEC 11-T2S-R97W
RIO BLANCO COUNTY, COLORADO
CAERUS OIL AND GAS, LLC



TABLES

TABLE 1

SOIL ANALYTICAL RESULTS

PCU T73-11G

RIO BLANCO COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES			
				20220509-T73-11G(PIT-N)@ 4'	20220509-T73-11G(PIT-S)@ 4'	20220509-T73-11G(PIT-S)@ 4'	20220523-T73-11G (POC-FL01) @ 8'
Sample Date				5/9/2022	5/9/2022	5/9/2022	5/23/2022
Sample Depth/ Depth Range (feet)				4	4	4	8
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	4.24	7.10	5.56	5.15
Barium	15,000	82 (M)	mg/kg	172	111	NA	198
Boron	2	2	mg/l	ND	ND	NA	ND
Cadmium	71	0.38 (M)	mg/kg	ND	ND	NA	ND
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	NA	ND
Copper	3,100	46 (M)	mg/kg	6.83	6.94	NA	13.6
Lead	400	14 (M)	mg/kg	8.17	9.45	NA	10.9
Nickel	1,500	26 (R)	mg/kg	11.4	12.4	NA	18.5
Selenium	390	0.26 (M)	mg/kg	ND	ND	NA	ND
Silver	390	0.8 (R)	mg/kg	ND	ND	NA	ND
Zinc	23,000	370 (R)	mg/kg	30.8	37.6	NA	52.2
EC	<4	<4	mmhos/cm	0.525	0.322	NA	0.301
pH	6 - 8.3	6 - 8.3	SU	8.41	9.03	NA	8.58
SAR	<6	<6	unitless	4.22	10.2	8.84	10.6
TPH-GRO			mg/kg	ND	ND	NA	ND
TPH-DRO			mg/kg	ND	ND	NA	ND
TPH-ORO			mg/kg	ND	ND	NA	ND
TPH	500	500	mg/kg	ND	ND	NA	ND
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	NA	0.0153
Toluene	490	0.69 (M)	mg/kg	ND	ND	NA	0.0243
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	NA	0.00370
Total Xylenes	58	9.9 (M)	mg/kg	ND	ND	NA	0.0654
56	30	0.0081 (R)	mg/kg	ND	ND	NA	0.0134
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	NA	0.0133
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	NA	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	NA	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	NA	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	NA	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	NA	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	NA	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	NA	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	NA	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	NA	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	NA	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	NA	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	NA	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	NA	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	NA	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	NA	ND

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

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

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 1

SOIL ANALYTICAL RESULTS

PCU T73-11G

RIO BLANCO COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	CONFIRMATION SOIL SAMPLES					
			20220811-T73-11G(S. PIT-S)@7-9'	20220811-T73-11G(S. PIT-S)@12-14'	20220811-T73-11G (S. PIT-C) @ 9-11'	20220811-T73-11G (S. PIT-C) @ 15-17'	20220811-T73-11G (S. PIT-W) @ 6-8'	20220811-T73-11G (S. PIT-W) @ 11-13'
Sample Date			8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022
Sample Depth/ Depth Range (feet)			7-8	12-14	9-11	15-17	6-8	11-13
Sample Type			Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	6.85	5.09	4.27	2.28	4.35	5.26
Barium	15,000	82 (M)	164	199	168	148	128	165
Boron	2	2	ND	ND	0.228	0.203	0.390	0.343
Cadmium	71	0.38 (M)	ND	ND	ND	ND	ND	ND
Chromium (VI)	0.3	0.00067 (R)	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	12.5	17.0	13.7	14.9	11.2	15.3
Lead	400	14 (M)	12.3	14.4	12.4	13.6	11.4	13.0
Nickel	1,500	26 (R)	13.7	18.2	15.7	13.9	14.2	16.7
Selenium	390	0.26 (M)	ND	ND	ND	ND	ND	ND
Silver	390	0.8 (R)	ND	ND	ND	ND	ND	ND
Zinc	23,000	370 (R)	45.4	52.0	45.6	40.2	40.9	49.5
EC	<4	<4	0.0351	0.0366	0.327	1.360	0.278	0.395
pH	6 - 8.3	6 - 8.3	9.44	9.45	8.94	8.41	8.89	9.00
SAR	<6	<6	5.30	9.24	7.39	9.60	7.72	9.77
TPH-GRO			ND	ND	ND	ND	ND	ND
TPH-DRO			ND	ND	ND	ND	4.83	4.23
TPH-ORO			ND	5.57	ND	ND	5.16	4.89
TPH	500	500	ND	5.57	ND	ND	9.99	9.12
Benzene	1.2	0.0026 (M)	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	ND	ND	ND	ND	ND	ND
56	30	0.0081 (R)	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	ND	ND	ND	ND	ND	ND

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

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

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 1

SOIL ANALYTICAL RESULTS

PCU T73-11G

RIO BLANCO COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	CONFIRMATION SOIL SAMPLES					
			20220812-T73-11G-(S. PIT-N) @ 5-7'	20220812-T73-11G-(S. PIT-N) @ 10-12'	20220812-T73-11G-(S. PIT-N) @ 15-17'	20220812-T73-11G-(S. PIT-E) @ 5-7'	20220812-T73-11G-(S. PIT-E) @ 10-12'	20220812-T73-11G-(S. PIT-E) @ 15-17'
Sample Date			8/12/2022	8/12/2022	8/12/2022	8/12/2022	8/12/2022	8/12/2022
Sample Depth/ Depth Range (feet)			5-7	10-12	15-17	5-7	10-12	15-17
Sample Type			Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	3.84	2.72	2.80	4.97	3.39	4.11
Barium	15,000	82 (M)	434	389	266	131	128	127
Boron	2	2	ND	ND	ND	ND	ND	ND
Cadmium	71	0.38 (M)	ND	ND	ND	ND	ND	ND
Chromium (VI)	0.3	0.00067 (R)	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	10.9	16.6	17.0	9.40	11.2	10.7
Lead	400	14 (M)	15.3	17.1	17.2	14.2	14.5	14.8
Nickel	1,500	26 (R)	15.1	14.8	15.5	16.1	14.3	14.8
Selenium	390	0.26 (M)	ND	ND	ND	ND	ND	ND
Silver	390	0.8 (R)	ND	ND	ND	ND	ND	ND
Zinc	23,000	370 (R)	45.1	47.9	51.8	39.5	41.3	40.7
EC	<4	<4	0.438	0.541	0.500	0.472	0.390	0.519
pH	6 - 8.3	6 - 8.3	9.53	9.50	9.41	9.61	9.37	9.16
SAR	<6	<6	2.40	15.4	14.2	2.77	4.28	15.0
TPH-GRO			ND	ND	ND	ND	ND	ND
TPH-DRO			ND	4.05	ND	ND	4.22	ND
TPH-ORO			ND	ND	ND	ND	ND	ND
TPH	500	500	ND	4.05	ND	ND	4.22	ND
Benzene	1.2	0.0026 (M)	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	ND	ND	ND	ND	ND	ND
56	30	0.0081 (R)	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	ND	ND	ND	ND	ND	ND

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

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TPH-DRO - total petroleum hydrocarbons-diesel range organics

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

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 1

SOIL ANALYTICAL RESULTS

PCU T73-11G

RIO BLANCO COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	BACKGROUND SAMPLES							
			BACKGROUND 1	BACKGROUND 2	BACKGROUND 3	BACKGROUND 4	BACKGROUND 5	BACKGROUND 6	BACKGROUND 7	BACKGROUND 8
Sample Date			8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012
Sample Depth/ Depth Range (feet)			Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Sample Type			Background	Background	Background	Background	Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	5.3	3.5	5.0	4.8	4.1	6.5	6.2	4.0
Barium	15,000	82 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Boron	2	2	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	NA	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	NA	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	NA	NA	NA	NA	NA	NA	NA	NA
SAR	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA
TPH-GRO			NA	NA	NA	NA	NA	NA	NA	NA
TPH-DRO			NA	NA	NA	NA	NA	NA	NA	NA
TPH-ORO			NA	NA	NA	NA	NA	NA	NA	NA
TPH	500	500	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1.2	0.0026 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	490	0.69 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	NA	NA	NA	NA	NA	NA	NA	NA
56	30	0.0081 (R)	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	27	0.0087 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,800	5.8 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	NA	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	NA	NA	NA	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	180	1.3 (R)	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

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SAR - sodium adsorption ratio

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TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

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

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 1

SOIL ANALYTICAL RESULTS

PCU T73-11G

RIO BLANCO COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	BACKGROUND SAMPLES					
			20220727-T75X(SB-BG01)@5-7'	20220727-T75X(SB-BG01)@15-17.5'	20220727-T75X(SB-BG01)@25-27.5'	20220727-T75X(SB-BG01)@35-37.5'	20220727-T75X(SB-BG01)@45-47.5'	20220727-T75X(SB-BG01)@47.5-50'
Sample Date			7/27/2022	7/27/2022	7/27/2022	7/27/2022	7/27/2022	7/27/2022
Sample Depth/ Depth Range (feet)			5-7.5	15-17.5	25-27.5	35-37.5	45-47.5	47.5-50
Sample Type			Background	Background	Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	NA	NA	NA	NA	NA	NA
Barium	15,000	82 (M)	NA	NA	NA	NA	NA	NA
Boron	2	2	0.494	ND	ND	ND	ND	ND
Cadmium	71	0.38 (M)	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	NA	NA	NA	NA	NA	NA
EC	<4	<4	0.632	0.230	0.254	0.202	0.237	0.280
pH	6 - 8.3	6 - 8.3	9.45	8.52	8.51	8.18	8.22	8.34
SAR	<6	<6	9.05	7.62	6.87	5.99	5.19	4.32
TPH-GRO			ND	ND	ND	ND	ND	ND
TPH-DRO			ND	ND	ND	5.35	ND	63.1
TPH-ORO			ND	ND	ND	ND	ND	206
TPH	500	500	ND	ND	ND	5.35	ND	269.1
Benzene	1.2	0.0026 (M)	NA	NA	NA	NA	NA	NA
Toluene	490	0.69 (M)	NA	NA	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	NA	NA	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	NA	NA	NA	NA	NA	NA
56	30	0.0081 (R)	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	NA	NA	NA	NA	NA	NA
Anthracene	1,800	5.8 (R)	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	NA	NA	NA	NA	NA	NA

NOTES:
BOLD - indicates result exceeds the COGCC residential soil screening level concentrations
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/l - milligrams per liter
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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
MCL - maxium containment level (M)

TABLE 1

SOIL ANALYTICAL RESULTS

PCU T73-11G

RIO BLANCO COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	BACKGROUND SAMPLES					
			20220728-T75X(SB-BG02)@5-7.5'	20220728-T75X(SB-BG02)@15-17.5'	20220728-T75X(SB-BG02)@25-27.5'	20220728-T75X(SB-BG02)@35-37.5'	20220728-T75X(SB-BG02)@45-47.5'	20220728-T75X(SB-BG02)@47.5-50'
Sample Date			7/28/2022	7/28/2022	7/28/2022	7/28/2022	7/28/2022	7/28/2022
Sample Depth/ Depth Range (feet)			5-7.5	15-17.5	25-27.5	35-37.5	45-47.5	47.5-50
Sample Type			Background	Background	Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	NA	NA	NA	NA	NA	NA
Barium	15,000	82 (M)	NA	NA	NA	NA	NA	NA
Boron	2	2	ND	ND	ND	0.579	ND	0.212
Cadmium	71	0.38 (M)	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	NA	NA	NA	NA	NA	NA
EC	<4	<4	0.496	0.282	0.325	0.331	0.302	0.586
pH	6 - 8.3	6 - 8.3	9.01	8.98	8.53	8.32	8.36	8.36
SAR	<6	<6	17.5	12.7	12.6	9.09	5.53	8.09
TPH-GRO			ND	ND	ND	ND	ND	ND
TPH-DRO			5.55	ND	ND	ND	20.0	11.2
TPH-ORO			6.05	ND	ND	ND	47.2	32.6
TPH	500	500	11.60	ND	ND	ND	67.2	43.8
Benzene	1.2	0.0026 (M)	NA	NA	NA	NA	NA	NA
Toluene	490	0.69 (M)	NA	NA	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	NA	NA	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	NA	NA	NA	NA	NA	NA
56	30	0.0081 (R)	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	NA	NA	NA	NA	NA	NA
Anthracene	1,800	5.8 (R)	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	NA	NA	NA	NA	NA	NA

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

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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

MCL - maxium containment level (M)

ENCLOSURE A – SOIL SCREENING PHOTOLOG

PHOTOGRAPHIC LOG


Caerus Oil and Gas LLC	PCU T73-11G Facility Decommissioning	31403501.017
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Photo No.	Date	
1	May 5, 2022	
PCU T73-11G Northern Pit facility decommissioning overview; View southeast		

Photo No.	Date	
2	May 5, 2022	
PCU T73-11G Northern Pit sample location 20220509 – T73-11G (Pit-N)@2'		

PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	PCU T73-11G Facility Decommissioning	31403501.017


Photo No.	Date	
3	May 5, 2022	
PCU T73-11G Northern Pit sample location 20220509 – T73-11G (Pit-N)@4'		

Photo No.	Date	
4	May 5, 2022	
PCU T73-11G Southern Pit facility decommissioning overview; View northwest		

PHOTOGRAPHIC LOG

Caerus Oil and Gas LLC	PCU T73-11G Facility Decommissioning	31403501.017
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Photo No.	Date	
5	May 5, 2022	
PCU T73-11G Southern Pit sample location 20220509 – T73-11G (Pit-N)@2'		

Photo No.	Date	
6	May 5, 2022	
PCU T73-11G Southern Pit sample location 20220509 – T73-11G (Pit-N)@4'		



PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	PCU T73-11G Facility Decommissioning	31403501.017

Photo No.	Date	
7	May 23, 2022	
PCU T73-11G Flowline Manhole 1 facility decommissioning overview; View east		

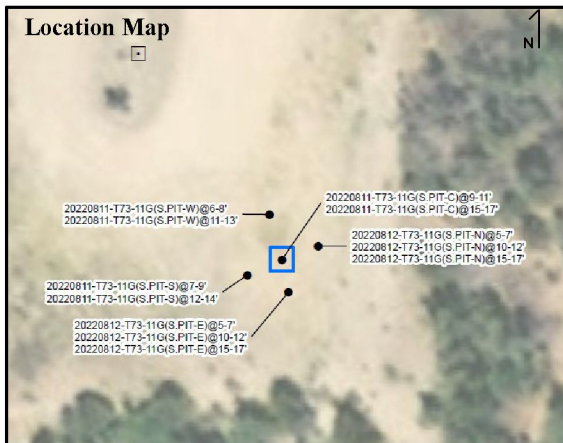
Photo No.	Date	
8	May 23, 2022	
PCU T73-11G Flowline Manhole 1 sample location 20220509 – T73-11G (POC-FL01)@8'		

PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	PCU T73-11G Facility Decommissioning	31403501.017

Photo No.	Date	
9	May 23, 2022	
PCU T73-11G Flowline Manhole 2 facility decommissioning overview; View east		

Photo No.	Date	
10	May 23, 2022	
PCU T73-11G Flowline Manhole 2 attempted sample location; Bedrock encountered, unable to sample		

ENCLOSURE B – SOIL BORING LOGS



HOLE DIAMETER: 4"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

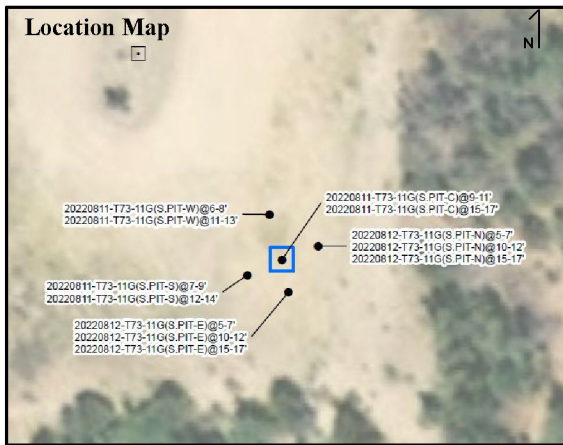


BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: T73-11G
PROJECT NO: 31403501.017
BORING/WELL ID: S.PIT-C
COMPLETION DATE: 8/11/2022
TD (ft bgs): 18'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Kelly Malone
SAMPLE METHOD: Split Spoon/Core
DRILL METHOD: Solid Stem/Core
DRILLED BY: CD&S
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

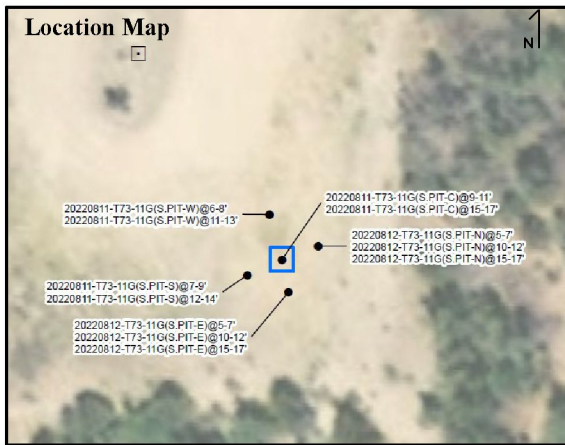
PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0		dry	S.PIT-C @10-12'	100	0			0' - 8' - Potholed to clear utilities, interval not logged.	
					5				
					10	Sandstone		8' - 10.1' - SANDSTONE, fine to medium grained, well cemented, massive, competent.	
					15	Mudstone		10.1' - 13' - MUDSTONE, fine to medium grained, well cemented, massive, competent.	
					20	Mudstone		13' - 18' - MUDSTONE, fine to medium grained, well cemented, massive, competent.	
0.0		dry	S.PIT-C @15-17'	80					



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER:	4"	PROJECT NAME:	T73-11G	LOGGED BY:	Kelly Malone
WELL DIAMETER:	NA	PROJECT NO:	31403501.017	SAMPLE METHOD:	Split Spoon/Core
CASING TYPE:	NA	BORING/WELL ID:	S.PIT-E	DRILL METHOD:	Solid Stem/Core
SCREEN TYPE:	NA	COMPLETION DATE:	8/12/2022	DRILLED BY:	CD&S
		TD (ft bgs):	17'	DETECTOR:	MiniRAE 3000
		DTW (ft bgs):	NA	FILTER PACK:	NA
		SCREEN SLOT:	NA	ANNULUS SEAL:	Bentonite Chips
		CASING LENGTH:	NA	SURFACE SEAL:	NA
		SCREEN LENGTH:	NA		

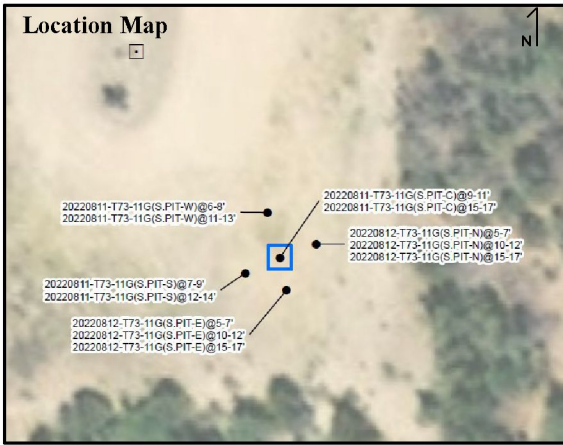
PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.4		dry	S.PIT-E @5-7'	95	0			0' - 2' - Potholed to clear utilities, interval not logged.	
						Sandstone		2' - 5' - SANDSTONE, fine to medium grained, well cemented, massive, competent.	
					5	Sandstone		5' - 10' - SANDSTONE, fine to medium grained, well cemented, massive, competent, iron oxides.	
0.1		dry	S.PIT-E @10-12'	95	10	Sandstone		10' - 13.3' - SANDSTONE, fine to medium grained, well cemented, massive, competent, iron oxides.	
						Mudstone		13.3' - 15' - MUDSTONE, fine grained, well cemented, massive, competent.	
1.7		dry	S.PIT-E @15-17'	75	15	Mudstone		15' - 17' - MUDSTONE, fine grained, well cemented, massive, competent.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER:	4"	PROJECT NAME:	T73-11G	LOGGED BY:	Kelly Malone
WELL DIAMETER:	NA	PROJECT NO:	31403501.017	SAMPLE METHOD:	Split Spoon/Core
CASING TYPE:	NA	BORING/WELL ID:	S.PIT-N	DRILL METHOD:	Solid Stem/Core
SCREEN TYPE:	NA	COMPLETION DATE:	8/12/2022	DRILLED BY:	CD&S
		TD (ft bgs):	17'	DETECTOR:	MiniRAE 3000
		DTW (ft bgs):	NA	FILTER PACK:	NA
		SCREEN SLOT:	NA	ANNULUS SEAL:	Bentonite Chips
		CASING LENGTH:	NA	SURFACE SEAL:	NA
		SCREEN LENGTH:	NA		

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0		dry	S.PIT-N @5-7'	95	0			0' - 2' - Potholed to clear utilities, interval not logged.	
0.8		dry	S.PIT-N @10-12'	95	5	Sandstone		5' - 10.8' - SANDSTONE, fine to medium grained, well cemented, massive, competent, iron oxides.	
0.4		dry	S.PIT-N @15-17'	75	10	Mudstone		10.8' - 15' - MUDSTONE, fine grained, massive, non-plastic.	
					15	Mudstone		15' - 17' - MUDSTONE, fine grained, massive, non-plastic.	



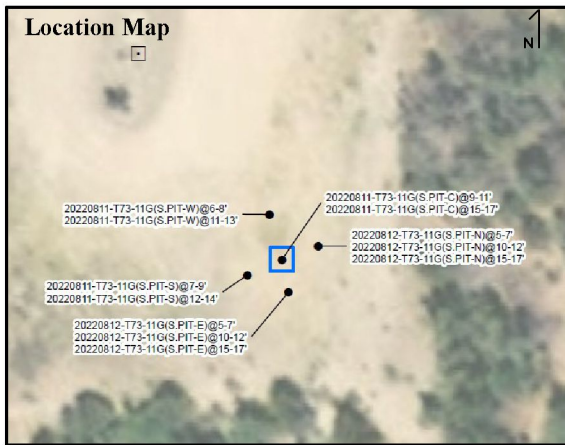
HOLE DIAMETER: 4"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	T73-11G	LOGGED BY:	Kelly Malone
PROJECT NO:	31403501.017	SAMPLE METHOD:	Split Spoon/Core
BORING/WELL ID:	S.PIT-S	DRILL METHOD:	Solid Stem/Core
COMPLETION DATE:	8/11/2022	DRILLED BY:	CD&S
TD (ft bgs):	17'	DETECTOR:	MiniRAE 3000
DTW (ft bgs):	NA	FILTER PACK:	NA
SCREEN SLOT:	NA	ANNULUS SEAL:	Bentonite Chips
CASING LENGTH:	NA	SURFACE SEAL:	NA
SCREEN LENGTH:	NA		

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0		dry	S.PIT-S @7-9'		0			0' - 7' - Potholed to clear utilities, interval not logged.	
				100	10	Sandstone		7' - 12' - SANDSTONE, fine to medium grained, well cemented, massive, competent.	
0.0		dry	S.PIT-S @12-14'	95	15	Sandstone		12' - 17' - SANDSTONE, fine to medium grained, well cemented, massive, competent.	



HOLE DIAMETER: 4"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

WSP

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: T73-11G
PROJECT NO: 31403501.017
BORING/WELL ID: S.PIT-W
COMPLETION DATE: 8/11/2022
TD (ft bgs): 15'
DTW (ft bgs): NA
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Kelly Malone
SAMPLE METHOD: Split Spoon/Core
DRILL METHOD: Solid Stem/Core
DRILLED BY: CD&S
DETECTOR: MiniRAE 3000
FILTER PACK: NA
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0		dry	S.PIT-W @6-8'		0			0' - 6' - Potholed to clear utilities, interval not logged.	
					5				
				95		Sandstone		6' - 11' - SANDSTONE, fine to medium grained, well cemented, massive, competent.	
					10				
0.2		dry	S.PIT-W @11-13'			Sandstone		11' - 15' - SANDSTONE, fine to medium grained, well cemented, massive, competent.	
				100					
					15				

ENCLOSURE C – LABORATORY ANALYTICAL RESULTS

Caerus Oil and Gas

Sample Delivery Group: L1493504
Samples Received: 05/13/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Jake Janicek
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.

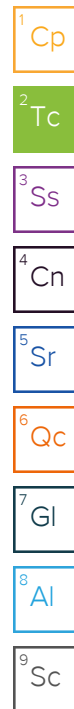


Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20220509-T73-11G (PIT-N) @ 4' L1493504-01 Solid

Collected by
Kevin Fletcher

Collected date/time
05/09/22 11:15

Received date/time
05/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1863789	1	05/22/22 17:53	05/22/22 17:53	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1865239	1	05/17/22 23:59	05/18/22 23:24	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1865950	1	05/19/22 10:45	05/19/22 10:50	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1866299	1	05/20/22 08:08	05/20/22 16:22	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865236	1	05/18/22 07:45	05/19/22 19:51	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1863790	1	05/19/22 14:57	05/22/22 16:35	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1865238	5	05/18/22 07:41	05/18/22 20:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1864792	1	05/14/22 16:47	05/19/22 18:55	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864418	1	05/14/22 16:47	05/16/22 16:29	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1867117	1	05/21/22 07:59	05/23/22 13:06	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1866214	1	05/19/22 08:42	05/19/22 16:27	AMM	Mt. Juliet, TN

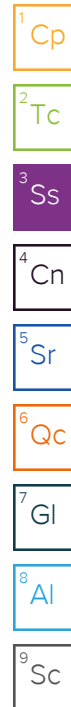
20220509-T73-11G (PIT-S) @ 4' L1493504-02 Solid

Collected by
Kevin Fletcher

Collected date/time
05/09/22 11:55

Received date/time
05/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1863789	1	05/22/22 17:56	05/22/22 17:56	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1865239	1	05/17/22 23:59	05/18/22 23:29	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1865950	1	05/19/22 10:45	05/19/22 10:50	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1866299	1	05/20/22 08:08	05/20/22 16:22	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865236	1	05/18/22 07:45	05/19/22 19:54	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1863790	1	05/19/22 14:57	05/22/22 16:38	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1865238	5	05/18/22 07:41	05/18/22 20:43	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1864792	1	05/14/22 16:47	05/19/22 19:17	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864418	1	05/14/22 16:47	05/16/22 16:48	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1867117	1	05/21/22 07:59	05/23/22 13:20	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1866214	1	05/19/22 08:42	05/19/22 16:45	AMM	Mt. Juliet, TN



CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.22		1	05/22/2022 17:53	WG1863789

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2022 23:24	WG1865239

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.41	T8	1	05/19/2022 10:50	WG1865950

Sample Narrative:

L1493504-01 WG1865950: 8.41 at 22.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	525		10.0	1	05/20/2022 16:22	WG1866299

Sample Narrative:

L1493504-01 WG1866299: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	172		0.500	1	05/19/2022 19:51	WG1865236
Cadmium	ND		0.500	1	05/19/2022 19:51	WG1865236
Copper	6.83		2.00	1	05/19/2022 19:51	WG1865236
Lead	8.17		0.500	1	05/19/2022 19:51	WG1865236
Nickel	11.4		2.00	1	05/19/2022 19:51	WG1865236
Selenium	ND		2.00	1	05/19/2022 19:51	WG1865236
Silver	ND		1.00	1	05/19/2022 19:51	WG1865236
Zinc	30.8		5.00	1	05/19/2022 19:51	WG1865236

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2022 16:35	WG1863790

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.24		1.00	5	05/18/2022 20:40	WG1865238

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/19/2022 18:55	WG1864792
(S) a,a,a-Trifluorotoluene(FID)	111		77.0-120		05/19/2022 18:55	WG1864792



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/16/2022 16:29	WG1864418
Toluene	ND		0.00500	1	05/16/2022 16:29	WG1864418
Ethylbenzene	ND		0.00250	1	05/16/2022 16:29	WG1864418
Xylenes, Total	ND		0.00650	1	05/16/2022 16:29	WG1864418
1,2,4-Trimethylbenzene	ND		0.00500	1	05/16/2022 16:29	WG1864418
1,3,5-Trimethylbenzene	ND		0.00500	1	05/16/2022 16:29	WG1864418
(S) Toluene-d8	93.6		75.0-131		05/16/2022 16:29	WG1864418
(S) 4-Bromofluorobenzene	103		67.0-138		05/16/2022 16:29	WG1864418
(S) 1,2-Dichloroethane-d4	94.6		70.0-130		05/16/2022 16:29	WG1864418

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/23/2022 13:06	WG1867117
C28-C36 Motor Oil Range	ND		4.00	1	05/23/2022 13:06	WG1867117
(S) o-Terphenyl	39.8		18.0-148		05/23/2022 13:06	WG1867117

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Anthracene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Benzo(a)anthracene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Benzo(b)fluoranthene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Benzo(k)fluoranthene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Benzo(a)pyrene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Chrysene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Dibenz(a,h)anthracene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Fluoranthene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Fluorene	ND		0.00600	1	05/19/2022 16:27	WG1866214
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/19/2022 16:27	WG1866214
1-Methylnaphthalene	ND		0.0200	1	05/19/2022 16:27	WG1866214
2-Methylnaphthalene	ND		0.0200	1	05/19/2022 16:27	WG1866214
Naphthalene	ND		0.0200	1	05/19/2022 16:27	WG1866214
Pyrene	ND		0.00600	1	05/19/2022 16:27	WG1866214
(S) p-Terphenyl-d14	87.6		23.0-120		05/19/2022 16:27	WG1866214
(S) Nitrobenzene-d5	62.4		14.0-149		05/19/2022 16:27	WG1866214
(S) 2-Fluorobiphenyl	76.9		34.0-125		05/19/2022 16:27	WG1866214

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	10.2		1	05/22/2022 17:56	WG1863789

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2022 23:29	WG1865239

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.03	T8	1	05/19/2022 10:50	WG1865950

Sample Narrative:

L1493504-02 WG1865950: 9.03 at 22.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	322		10.0	1	05/20/2022 16:22	WG1866299

Sample Narrative:

L1493504-02 WG1866299: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	111		0.500	1	05/19/2022 19:54	WG1865236
Cadmium	ND		0.500	1	05/19/2022 19:54	WG1865236
Copper	6.94		2.00	1	05/19/2022 19:54	WG1865236
Lead	9.45		0.500	1	05/19/2022 19:54	WG1865236
Nickel	12.4		2.00	1	05/19/2022 19:54	WG1865236
Selenium	ND		2.00	1	05/19/2022 19:54	WG1865236
Silver	ND		1.00	1	05/19/2022 19:54	WG1865236
Zinc	37.6		5.00	1	05/19/2022 19:54	WG1865236

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2022 16:38	WG1863790

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	7.10		1.00	5	05/18/2022 20:43	WG1865238

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/19/2022 19:17	WG1864792
(S) a,a,a-Trifluorotoluene(FID)	113		77.0-120		05/19/2022 19:17	WG1864792



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/16/2022 16:48	WG1864418
Toluene	ND		0.00500	1	05/16/2022 16:48	WG1864418
Ethylbenzene	ND		0.00250	1	05/16/2022 16:48	WG1864418
Xylenes, Total	ND		0.00650	1	05/16/2022 16:48	WG1864418
1,2,4-Trimethylbenzene	ND		0.00500	1	05/16/2022 16:48	WG1864418
1,3,5-Trimethylbenzene	ND		0.00500	1	05/16/2022 16:48	WG1864418
(S) Toluene-d8	92.8		75.0-131		05/16/2022 16:48	WG1864418
(S) 4-Bromofluorobenzene	104		67.0-138		05/16/2022 16:48	WG1864418
(S) 1,2-Dichloroethane-d4	96.8		70.0-130		05/16/2022 16:48	WG1864418

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/23/2022 13:20	WG1867117
C28-C36 Motor Oil Range	ND		4.00	1	05/23/2022 13:20	WG1867117
(S) o-Terphenyl	57.3		18.0-148		05/23/2022 13:20	WG1867117

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Anthracene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Benzo(a)anthracene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Benzo(b)fluoranthene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Benzo(k)fluoranthene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Benzo(a)pyrene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Chrysene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Dibenz(a,h)anthracene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Fluoranthene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Fluorene	ND		0.00600	1	05/19/2022 16:45	WG1866214
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/19/2022 16:45	WG1866214
1-Methylnaphthalene	ND		0.0200	1	05/19/2022 16:45	WG1866214
2-Methylnaphthalene	ND		0.0200	1	05/19/2022 16:45	WG1866214
Naphthalene	ND		0.0200	1	05/19/2022 16:45	WG1866214
Pyrene	ND		0.00600	1	05/19/2022 16:45	WG1866214
(S) p-Terphenyl-d14	105		23.0-120		05/19/2022 16:45	WG1866214
(S) Nitrobenzene-d5	76.7		14.0-149		05/19/2022 16:45	WG1866214
(S) 2-Fluorobiphenyl	85.4		34.0-125		05/19/2022 16:45	WG1866214

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3793649-1 05/18/22 19:45

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

L1491801-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1491801-01 05/18/22 19:56 • (DUP) R3793649-3 05/18/22 20:01

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	1.20	1.20	1	0.106		20

Laboratory Control Sample (LCS)

(LCS) R3793649-2 05/18/22 19:51

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

L1493427-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493427-01 05/18/22 22:22 • (MS) R3793649-4 05/18/22 22:27 • (MSD) R3793649-5 05/18/22 22:32

	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	ND	17.6	12.1	88.0	60.4	1	75.0-125		J3 J6	37.2	20

L1493427-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1493427-01 05/18/22 22:22 • (MS) R3793649-6 05/18/22 22:37

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	646	ND	638	98.8	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1493504-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493504-01 05/19/22 10:50 • (DUP) R3793916-2 05/19/22 10:50

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.41	8.48	1	0.829		1

Sample Narrative:

OS: 8.41 at 22.3C

DUP: 8.48 at 22.3C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1493648-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493648-01 05/19/22 10:50 • (DUP) R3793916-3 05/19/22 10:50

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.97	7.98	1	0.125		1

Sample Narrative:

OS: 7.97 at 22.9C

DUP: 7.98 at 22.9C

Laboratory Control Sample (LCS)

(LCS) R3793916-1 05/19/22 10:50

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.93	99.3	99.0-101	

Sample Narrative:

LCS: 9.93 at 22.6C

Method Blank (MB)

(MB) R3794359-1 05/20/22 16:22

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

L1493441-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493441-01 05/20/22 16:22 • (DUP) R3794359-3 05/20/22 16:22

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	934	929	1	0.537		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1493667-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493667-01 05/20/22 16:22 • (DUP) R3794359-4 05/20/22 16:22

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	310	359	1	14.6		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3794359-2 05/20/22 16:22

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	286	107	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) R3793990-1 05/19/22 19:08

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

Laboratory Control Sample (LCS)

(LCS) R3793990-2 05/19/22 19:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	108	108	80.0-120	
Cadmium	100	100	100	80.0-120	
Copper	100	108	108	80.0-120	
Lead	100	101	101	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	97.9	97.9	80.0-120	
Silver	20.0	19.1	95.4	80.0-120	
Zinc	100	99.9	99.9	80.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3794739-1 05/22/22 16:27

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) R3794739-2 05/22/22 16:29 • (LCSD) R3794739-3 05/22/22 16:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.01	0.999	101	99.9	80.0-120			1.26	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3793881-1 05/18/22 19:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3793881-2 05/18/22 19:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	102	102	80.0-120	

L1493500-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493500-01 05/18/22 19:53 • (MS) R3793881-5 05/18/22 20:04 • (MSD) R3793881-6 05/18/22 20:07

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	3.64	115	120	111	116	5	75.0-125			4.47	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3794154-2 05/19/22 13:51

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)	112			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3794154-1 05/19/22 12:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.70	104	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.6	77.0-120	

L1493426-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493426-01 05/19/22 16:25 • (MS) R3794154-3 05/19/22 23:36 • (MSD) R3794154-4 05/19/22 23:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	5.02	4.86	91.3	88.4	1	10.0-151			3.24	28
(S) a,a,a-Trifluorotoluene(FID)					101	102		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3792369-3 05/16/22 10:48

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	0.00230	U	0.000880	0.00650
1,2,4-Trimethylbenzene	0.00353	U	0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	95.7			75.0-131
(S) 4-Bromofluorobenzene	104			67.0-138
(S) 1,2-Dichloroethane-d4	100			70.0-130

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

(LCS) R3792369-1 05/16/22 09:32 • (LCSD) R3792369-2 05/16/22 09:51

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	0.122	0.120	97.6	96.0	70.0-123			1.65	20
Toluene	0.125	0.115	0.115	92.0	92.0	75.0-121			0.000	20
Ethylbenzene	0.125	0.112	0.111	89.6	88.8	74.0-126			0.897	20
Xylenes, Total	0.375	0.345	0.345	92.0	92.0	72.0-127			0.000	20
1,2,4-Trimethylbenzene	0.125	0.124	0.127	99.2	102	70.0-126			2.39	20
1,3,5-Trimethylbenzene	0.125	0.117	0.120	93.6	96.0	73.0-127			2.53	20
(S) Toluene-d8				93.4	93.6	75.0-131				
(S) 4-Bromofluorobenzene				104	104	67.0-138				
(S) 1,2-Dichloroethane-d4				105	103	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3795087-1 05/23/22 12:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	69.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3795087-2 05/23/22 12:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.9	67.8	50.0-150	
(S) o-Terphenyl			57.4	18.0-148	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3794341-2 05/19/22 14:22

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	106			23.0-120
(S) Nitrobenzene-d5	66.5			14.0-149
(S) 2-Fluorobiphenyl	80.7			34.0-125

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3794341-1 05/19/22 14:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0713	89.1	50.0-120	
Anthracene	0.0800	0.0716	89.5	50.0-126	
Benzo(a)anthracene	0.0800	0.0710	88.8	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0674	84.3	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0710	88.8	49.0-125	
Benzo(a)pyrene	0.0800	0.0625	78.1	42.0-120	
Chrysene	0.0800	0.0734	91.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0701	87.6	47.0-125	
Fluoranthene	0.0800	0.0710	88.8	49.0-129	
Fluorene	0.0800	0.0743	92.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0694	86.8	46.0-125	
1-Methylnaphthalene	0.0800	0.0719	89.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0686	85.8	50.0-120	
Naphthalene	0.0800	0.0720	90.0	50.0-120	
Pyrene	0.0800	0.0707	88.4	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3794341-1 05/19/22 14:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			107	23.0-120	
(S) Nitrobenzene-d5			74.8	14.0-149	
(S) 2-Fluorobiphenyl			87.3	34.0-125	

L1493667-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493667-02 05/19/22 19:43 • (MS) R3794341-3 05/19/22 20:01 • (MSD) R3794341-4 05/19/22 20:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0768	ND	0.0634	0.0571	82.6	72.8	1	14.0-127			10.5	27
Anthracene	0.0768	ND	0.0631	0.0551	82.2	70.3	1	10.0-145			13.5	30
Benzo(a)anthracene	0.0768	ND	0.0622	0.0544	81.0	69.4	1	10.0-139			13.4	30
Benzo(b)fluoranthene	0.0768	ND	0.0610	0.0546	79.4	69.6	1	10.0-140			11.1	36
Benzo(k)fluoranthene	0.0768	ND	0.0612	0.0529	79.7	67.5	1	10.0-137			14.5	31
Benzo(a)pyrene	0.0768	ND	0.0619	0.0539	80.6	68.8	1	10.0-141			13.8	31
Chrysene	0.0768	ND	0.0651	0.0570	84.8	72.7	1	10.0-145			13.3	30
Dibenz(a,h)anthracene	0.0768	ND	0.0614	0.0531	79.9	67.7	1	10.0-132			14.5	31
Fluoranthene	0.0768	ND	0.0637	0.0562	82.9	71.7	1	10.0-153			12.5	33
Fluorene	0.0768	ND	0.0648	0.0581	84.4	74.1	1	11.0-130			10.9	29
Indeno(1,2,3-cd)pyrene	0.0768	ND	0.0611	0.0547	79.6	69.8	1	10.0-137			11.1	32
1-Methylnaphthalene	0.0768	ND	0.0660	0.0595	85.9	75.9	1	10.0-142			10.4	28
2-Methylnaphthalene	0.0768	ND	0.0612	0.0557	79.7	71.0	1	10.0-137			9.41	28
Naphthalene	0.0768	ND	0.0640	0.0580	83.3	74.0	1	10.0-135			9.84	27
Pyrene	0.0768	ND	0.0639	0.0561	83.2	71.6	1	10.0-148			13.0	35
(S) p-Terphenyl-d14					101	89.2		23.0-120				
(S) Nitrobenzene-d5					71.2	60.5		14.0-149				
(S) 2-Fluorobiphenyl					82.4	71.6		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.

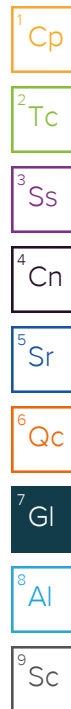
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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



June 30, 2022

Caerus Oil and Gas

Sample Delivery Group: L1502197
Samples Received: 05/13/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Entire Report Reviewed By:

Chris Ward

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

20220509-T73-11G (PIT-S) @ 4' L1502197-01 Solid

Collected by
Kevin Fletcher

Collected date/time
05/09/22 11:55

Received date/time
05/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1881322	1	06/20/22 12:01	06/20/22 12:01	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1887748	5	06/29/22 20:08	06/30/22 11:53	SJM	Mt. Juliet, TN

 ^1Cp ${}^2\text{Tc}$ 3S_s ${}^4\text{Cn}$ ${}^5\text{Sr}$ ${}^6\text{Qc}$ ${}^7\text{Gf}$ ${}^8\text{Al}$ ${}^9\text{Sc}$

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	8.84		1	06/20/2022 12:01	WG1881322

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.56		1.00	5	06/30/2022 11:53	WG1887748

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3809419-1 06/30/22 11:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3809419-7 06/30/22 11:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	79.6	80.0	80.0-120	

L1508996-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1508996-03 06/30/22 11:36 • (MS) R3809419-5 06/30/22 11:46 • (MSD) R3809419-6 06/30/22 11:50

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 %
Arsenic	99.6	7.36	90.8	96.0	83.4	88.6	5	75.0-125			5.58	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

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Qc

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Gl

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Al

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Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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.
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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

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



L1493504-02 *CAERUSPCO*

R3/R4/RX/EX

Please relog L1493504-02 to a new SDG for ASG and SAR on an EX TAT

* _ *

**Please note that email addresses for staff at the Pace Analytical National Center for Testing & Innovation have changed*.*

_My new email address is <u>Chris.Ward@pacelabs.com</u>. Please update your records accordingly.

**

Thanks,

Project Manager2_

_*Pace Analytical National

*

12065 Lebanon Road | Mt. Juliet, TN 37122**

Chris.ward@pacelabs.com

| www.pacenational.com

<u>615.773.9712</u>

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P Please consider the environment before printing this email

Time estimate: oh

Time spent: oh

Members




Chris Ward (responsible)

Caerus Oil and Gas

Sample Delivery Group: L1497355
Samples Received: 05/24/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



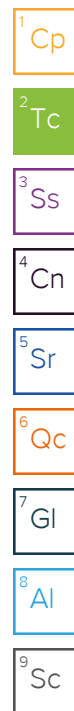
Chris Ward
Project Manager

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

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

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Sc: Sample Chain of Custody	21



SAMPLE SUMMARY

20220523-T73-11G (POC-FL01) @ 8' L1497355-01 Solid

Collected by
Kevin Fletcher

Collected date/time
05/23/22 11:25

Received date/time
05/24/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1874675	1	06/10/22 15:31	06/10/22 15:31	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1872284	1	05/31/22 17:05	06/01/22 11:59	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1872040	1	05/31/22 13:00	05/31/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1871587	1	06/01/22 06:36	06/01/22 13:25	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1871141	1	05/31/22 17:14	06/01/22 16:44	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1874677	2	06/07/22 10:11	06/09/22 16:51	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1871139	5	05/31/22 16:52	06/01/22 11:04	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1871916	1	05/25/22 19:00	05/31/22 15:58	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1872294	1	05/25/22 19:00	06/01/22 03:31	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1873135	1	06/02/22 16:26	06/03/22 07:05	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1873239	1	06/02/22 14:11	06/03/22 03:32	JNJ	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	10.6		1	06/10/2022 15:31	WG1874675

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/01/2022 11:59	WG1872284

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.58	T8	1	05/31/2022 15:00	WG1872040

Sample Narrative:

L1497355-01 WG1872040: 8.58 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	301		10.0	1	06/01/2022 13:25	WG1871587

Sample Narrative:

L1497355-01 WG1871587: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	198		0.500	1	06/01/2022 16:44	WG1871141
Cadmium	ND		0.500	1	06/01/2022 16:44	WG1871141
Copper	13.6		2.00	1	06/01/2022 16:44	WG1871141
Lead	10.9		0.500	1	06/01/2022 16:44	WG1871141
Nickel	18.5		2.00	1	06/01/2022 16:44	WG1871141
Selenium	ND		2.00	1	06/01/2022 16:44	WG1871141
Silver	ND		1.00	1	06/01/2022 16:44	WG1871141
Zinc	52.2		5.00	1	06/01/2022 16:44	WG1871141

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.400	2	06/09/2022 16:51	WG1874677

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.15		1.00	5	06/01/2022 11:04	WG1871139

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/31/2022 15:58	WG1871916
(S) a,a,a-Trifluorotoluene(FID)	99.4		77.0-120		05/31/2022 15:58	WG1871916

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00153		0.00100	1	06/01/2022 03:31	WG1872294
Toluene	0.0243		0.00500	1	06/01/2022 03:31	WG1872294
Ethylbenzene	0.00370		0.00250	1	06/01/2022 03:31	WG1872294
Xylenes, Total	0.0654		0.00650	1	06/01/2022 03:31	WG1872294
1,2,4-Trimethylbenzene	0.0134		0.00500	1	06/01/2022 03:31	WG1872294
1,3,5-Trimethylbenzene	0.0133		0.00500	1	06/01/2022 03:31	WG1872294
(S) Toluene-d8	100		75.0-131		06/01/2022 03:31	WG1872294
(S) 4-Bromofluorobenzene	105		67.0-138		06/01/2022 03:31	WG1872294
(S) 1,2-Dichloroethane-d4	99.7		70.0-130		06/01/2022 03:31	WG1872294

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/03/2022 07:05	WG1873135
C28-C36 Motor Oil Range	ND		4.00	1	06/03/2022 07:05	WG1873135
(S) o-Terphenyl	49.4		18.0-148		06/03/2022 07:05	WG1873135

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Anthracene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Benzo(a)anthracene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Benzo(b)fluoranthene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Benzo(k)fluoranthene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Benzo(a)pyrene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Chrysene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Dibenz(a,h)anthracene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Fluoranthene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Fluorene	ND		0.00600	1	06/03/2022 03:32	WG1873239
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/03/2022 03:32	WG1873239
1-Methylnaphthalene	ND		0.0200	1	06/03/2022 03:32	WG1873239
2-Methylnaphthalene	ND		0.0200	1	06/03/2022 03:32	WG1873239
Naphthalene	ND		0.0200	1	06/03/2022 03:32	WG1873239
Pyrene	ND		0.00600	1	06/03/2022 03:32	WG1873239
(S) p-Terphenyl-d14	66.4		23.0-120		06/03/2022 03:32	WG1873239
(S) Nitrobenzene-d5	66.0		14.0-149		06/03/2022 03:32	WG1873239
(S) 2-Fluorobiphenyl	63.7		34.0-125		06/03/2022 03:32	WG1873239

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3798208-1 06/01/22 09:48

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

L1497352-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1497352-04 06/01/22 11:13 • (DUP) R3798208-7 06/01/22 11:18

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

L1497829-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1497829-01 06/01/22 12:10 • (DUP) R3798208-8 06/01/22 12:15

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

Laboratory Control Sample (LCS)

(LCS) R3798208-2 06/01/22 09:55

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.43	94.3	80.0-120	

L1496917-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1496917-01 06/01/22 10:11 • (MS) R3798208-3 06/01/22 10:16 • (MSD) R3798208-4 06/01/22 10:21

	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	ND	18.8	19.1	91.7	92.9	1	75.0-125			1.24	20

L1496917-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1496917-01 06/01/22 10:11 • (MS) R3798208-5 06/01/22 10:26

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	693	ND	617	89.1	50	75.0-125	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3797835-1 05/31/22 15:00

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

Sample Narrative:

LCS: 9.9 at 22.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3798172-1 06/01/22 13:25

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

L1497096-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1497096-04 06/01/22 13:25 • (DUP) R3798172-3 06/01/22 13:25

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	623	635	1	1.91		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1497847-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1497847-02 06/01/22 13:25 • (DUP) R3798172-4 06/01/22 13:25

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	735	700	1	4.88		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3798172-2 06/01/22 13:25

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	288	107	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) R3798407-1 06/01/22 15:54

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3798407-2 06/01/22 15:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	102	102	80.0-120	
Cadmium	100	98.4	98.4	80.0-120	
Copper	100	99.0	99.0	80.0-120	
Lead	100	99.2	99.2	80.0-120	
Nickel	100	100	100	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	19.5	97.4	80.0-120	
Zinc	100	98.3	98.3	80.0-120	

L1497352-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497352-03 06/01/22 16:00 • (MS) R3798407-5 06/01/22 16:09 • (MSD) R3798407-6 06/01/22 16:12

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	236	312	331	75.9	95.1	1	75.0-125			5.99	20
Cadmium	100	ND	93.8	91.3	93.8	91.3	1	75.0-125			2.74	20
Copper	100	9.18	100	101	91.0	92.2	1	75.0-125			1.20	20
Lead	100	5.10	95.7	94.6	90.6	89.5	1	75.0-125			1.20	20
Nickel	100	13.8	106	108	92.1	94.1	1	75.0-125			1.92	20
Selenium	100	ND	96.7	91.5	96.7	91.5	1	75.0-125			5.47	20
Silver	20.0	ND	18.9	18.4	94.4	92.2	1	75.0-125			2.38	20
Zinc	100	23.2	105	106	81.3	82.8	1	75.0-125			1.38	20

Method Blank (MB)

(MB) R3801596-1 06/09/22 16:05

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) R3801596-2 06/09/22 16:07 • (LCSD) R3801596-3 06/09/22 16:10

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	1.00	1.00	100	100	80.0-120			0.280	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3798066-1 06/01/22 10:08

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3798066-2 06/01/22 10:11

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	90.8	90.8	80.0-120	

L1497352-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497352-03 06/01/22 10:14 • (MS) R3798066-5 06/01/22 10:24 • (MSD) R3798066-6 06/01/22 10:28

	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	%	%		%			%	%
Arsenic	100	4.99	85.8	81.9	80.8	76.9	5	75.0-125			4.65	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3798133-2 05/31/22 14:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0293	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	99.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3798133-1 05/31/22 12:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.64	103	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) R3798087-3 06/01/22 02:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	99.7			75.0-131
(S) 4-Bromofluorobenzene	106			67.0-138
(S) 1,2-Dichloroethane-d4	104			70.0-130

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

(LCS) R3798087-1 06/01/22 01:36 • (LCSD) R3798087-2 06/01/22 01:55

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	0.119	0.121	95.2	96.8	70.0-123			1.67	20
Toluene	0.125	0.110	0.110	88.0	88.0	75.0-121			0.000	20
Ethylbenzene	0.125	0.112	0.113	89.6	90.4	74.0-126			0.889	20
Xylenes, Total	0.375	0.329	0.343	87.7	91.5	72.0-127			4.17	20
1,2,4-Trimethylbenzene	0.125	0.0900	0.0930	72.0	74.4	70.0-126			3.28	20
1,3,5-Trimethylbenzene	0.125	0.0991	0.0987	79.3	79.0	73.0-127			0.404	20
(S) Toluene-d8				99.2	98.3	75.0-131				
(S) 4-Bromofluorobenzene				105	106	67.0-138				
(S) 1,2-Dichloroethane-d4				100	100	70.0-130				

L1497353-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497353-05 06/01/22 04:09 • (MS) R3798087-4 06/01/22 09:51 • (MSD) R3798087-5 06/01/22 10:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.495	0.277	0.695	0.692	84.4	83.8	4	10.0-149			0.433	37
Toluene	0.495	6.04	6.63	5.82	119	0.000	4	10.0-156		V	13.0	38
Ethylbenzene	0.495	1.14	1.65	1.57	103	86.9	4	10.0-160			4.97	38
Xylenes, Total	1.48	19.5	21.5	20.7	135	81.1	4	10.0-160			3.79	38
1,2,4-Trimethylbenzene	0.495	3.77	3.94	4.15	34.3	76.8	4	10.0-160			5.19	36
1,3,5-Trimethylbenzene	0.495	3.49	3.64	3.76	30.3	54.5	4	10.0-160			3.24	38
(S) Toluene-d8					109	91.6		75.0-131				
(S) 4-Bromofluorobenzene					121	129		67.0-138				
(S) 1,2-Dichloroethane-d4					95.1	101		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3799047-1 06/03/22 00:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	76.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3799047-2 06/03/22 00:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.5	63.0	50.0-150	
(S) o-Terphenyl			67.9	18.0-148	

L1497702-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497702-01 06/03/22 07:32 • (MS) R3799047-3 06/03/22 07:45 • (MSD) R3799047-4 06/03/22 07:58

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	10.6	34.1	46.3	47.0	71.4	1	50.0-150	J6	J3	30.3	20
(S) o-Terphenyl					59.3	77.6		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3798990-2 06/02/22 23:23

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	91.1			23.0-120
(S) Nitrobenzene-d5	84.8			14.0-149
(S) 2-Fluorobiphenyl	81.5			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3798990-1 06/02/22 23:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0516	64.5	50.0-120	
Anthracene	0.0800	0.0495	61.9	50.0-126	
Benzo(a)anthracene	0.0800	0.0496	62.0	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0506	63.3	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0490	61.3	49.0-125	
Benzo(a)pyrene	0.0800	0.0445	55.6	42.0-120	
Chrysene	0.0800	0.0520	65.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0507	63.4	47.0-125	
Fluoranthene	0.0800	0.0506	63.3	49.0-129	
Fluorene	0.0800	0.0527	65.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0512	64.0	46.0-125	
1-Methylnaphthalene	0.0800	0.0522	65.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0507	63.4	50.0-120	
Naphthalene	0.0800	0.0505	63.1	50.0-120	
Pyrene	0.0800	0.0520	65.0	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3798990-1 06/02/22 23:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			80.3	23.0-120	
(S) Nitrobenzene-d5			79.7	14.0-149	
(S) 2-Fluorobiphenyl			71.9	34.0-125	

L1497429-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497429-01 06/03/22 04:07 • (MS) R3798990-3 06/03/22 04:25 • (MSD) R3798990-4 06/03/22 04:43

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0772	ND	0.0525	0.0598	68.0	75.5	1	14.0-127			13.0	27
Anthracene	0.0772	ND	0.0507	0.0576	65.7	72.7	1	10.0-145			12.7	30
Benzo(a)anthracene	0.0772	ND	0.0519	0.0601	67.2	75.9	1	10.0-139			14.6	30
Benzo(b)fluoranthene	0.0772	ND	0.0510	0.0581	66.1	73.4	1	10.0-140			13.0	36
Benzo(k)fluoranthene	0.0772	ND	0.0497	0.0585	64.4	73.9	1	10.0-137			16.3	31
Benzo(a)pyrene	0.0772	ND	0.0489	0.0571	63.3	72.1	1	10.0-141			15.5	31
Chrysene	0.0772	ND	0.0516	0.0609	66.8	76.9	1	10.0-145			16.5	30
Dibenz(a,h)anthracene	0.0772	ND	0.0500	0.0592	64.8	74.7	1	10.0-132			16.8	31
Fluoranthene	0.0772	ND	0.0524	0.0612	67.9	77.3	1	10.0-153			15.5	33
Fluorene	0.0772	ND	0.0540	0.0624	69.9	78.8	1	11.0-130			14.4	29
Indeno(1,2,3-cd)pyrene	0.0772	ND	0.0497	0.0583	64.4	73.6	1	10.0-137			15.9	32
1-Methylnaphthalene	0.0772	ND	0.0528	0.0595	68.4	75.1	1	10.0-142			11.9	28
2-Methylnaphthalene	0.0772	ND	0.0507	0.0581	65.7	73.4	1	10.0-137			13.6	28
Naphthalene	0.0772	ND	0.0511	0.0580	66.2	73.2	1	10.0-135			12.6	27
Pyrene	0.0772	ND	0.0527	0.0614	68.3	77.5	1	10.0-148			15.2	35
(S) p-Terphenyl-d14					80.6	97.0		23.0-120				
(S) Nitrobenzene-d5					84.7	102		14.0-149				
(S) 2-Fluorobiphenyl					71.8	85.6		34.0-125				

L1497429-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497429-02 06/03/22 05:01 • (MS) R3798990-5 06/03/22 05:18 • (MSD) R3798990-6 06/03/22 05:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0800	ND	0.0468	0.0618	58.5	77.3	1	14.0-127		J3	27.6	27
Anthracene	0.0800	ND	0.0445	0.0593	55.6	74.1	1	10.0-145			28.5	30
Benzo(a)anthracene	0.0800	ND	0.0453	0.0601	56.6	75.1	1	10.0-139			28.1	30
Benzo(b)fluoranthene	0.0800	ND	0.0463	0.0624	57.9	78.0	1	10.0-140			29.6	36
Benzo(k)fluoranthene	0.0800	ND	0.0446	0.0614	55.8	76.8	1	10.0-137		J3	31.7	31
Benzo(a)pyrene	0.0800	ND	0.0429	0.0581	53.6	72.6	1	10.0-141			30.1	31

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

L1497429-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497429-02 06/03/22 05:01 • (MS) R3798990-5 06/03/22 05:18 • (MSD) R3798990-6 06/03/22 05:36

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 %
Chrysene	0.0800	ND	0.0469	0.0630	58.6	78.8	1	10.0-145			29.3	30
Dibenz(a,h)anthracene	0.0800	ND	0.0461	0.0631	57.6	78.9	1	10.0-132		J3	31.1	31
Fluoranthene	0.0800	ND	0.0453	0.0605	56.6	75.6	1	10.0-153			28.7	33
Fluorene	0.0800	ND	0.0489	0.0640	61.1	80.0	1	11.0-130			26.7	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0457	0.0610	57.1	76.3	1	10.0-137			28.7	32
1-Methylnaphthalene	0.0800	ND	0.0469	0.0626	58.6	78.3	1	10.0-142		J3	28.7	28
2-Methylnaphthalene	0.0800	ND	0.0450	0.0612	56.3	76.5	1	10.0-137		J3	30.5	28
Naphthalene	0.0800	ND	0.0455	0.0601	56.9	75.1	1	10.0-135		J3	27.7	27
Pyrene	0.0800	ND	0.0472	0.0628	59.0	78.5	1	10.0-148			28.4	35
(S) p-Terphenyl-d14					75.7	88.1		23.0-120				
(S) Nitrobenzene-d5					86.0	100		14.0-149				
(S) 2-Fluorobiphenyl					69.5	79.3		34.0-125				

L1497429-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1497429-03 06/03/22 05:54 • (MS) R3798990-7 06/03/22 06:12 • (MSD) R3798990-8 06/03/22 06:30

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	0.0768	ND	0.0536	0.0611	69.8	76.8	1	14.0-127			13.1	27
Anthracene	0.0768	ND	0.0528	0.0550	68.7	69.1	1	10.0-145			4.08	30
Benzo(a)anthracene	0.0768	ND	0.0535	0.0539	67.3	65.4	1	10.0-139			0.745	30
Benzo(b)fluoranthene	0.0768	ND	0.0545	0.0591	68.5	71.9	1	10.0-140			8.10	36
Benzo(k)fluoranthene	0.0768	ND	0.0582	0.0582	75.8	73.1	1	10.0-137			0.000	31
Benzo(a)pyrene	0.0768	ND	0.0538	0.0545	70.1	68.5	1	10.0-141			1.29	31
Chrysene	0.0768	ND	0.0606	0.0596	78.9	74.9	1	10.0-145			1.66	30
Dibenz(a,h)anthracene	0.0768	ND	0.0602	0.0599	78.4	75.3	1	10.0-132			0.500	31
Fluoranthene	0.0768	ND	0.0522	0.0568	64.2	67.7	1	10.0-153			8.44	33
Fluorene	0.0768	ND	0.0548	0.0611	71.4	76.8	1	11.0-130			10.9	29
Indeno(1,2,3-cd)pyrene	0.0768	ND	0.0566	0.0578	73.7	72.6	1	10.0-137			2.10	32
1-Methylnaphthalene	0.0768	ND	0.0535	0.0602	69.7	75.6	1	10.0-142			11.8	28
2-Methylnaphthalene	0.0768	ND	0.0515	0.0579	67.1	72.7	1	10.0-137			11.7	28
Naphthalene	0.0768	ND	0.0551	0.0594	71.7	74.6	1	10.0-135			7.51	27
Pyrene	0.0768	ND	0.0549	0.0601	67.6	71.8	1	10.0-148			9.04	35
(S) p-Terphenyl-d14					103	94.8		23.0-120				
(S) Nitrobenzene-d5					98.6	90.5		14.0-149				
(S) 2-Fluorobiphenyl					94.6	85.1		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.

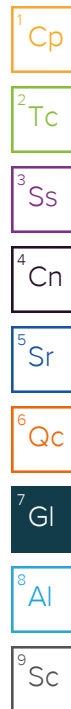
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
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.



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

Billing Information:

Same as above

Email To:

bmiddleton@caerusoilandgas.com

Report to:
bmiddleton@caerusoilandgas.com

Project Description:
PCU T73-11G

City/State Collected:
Pieance Crk, CO

Lab Project #
T73-11G

P.O. #
T73-11G

Quote #

Rush? (Lab MUST Be Notified)

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

Date Results Needed

Standard TAT

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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



L #

D003

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
20220523- T73-11G (POC-FL01)@8'	Grab	SS	NA	5/23/2022	1125	3

TPH- GRO, DRO, ORO

BTEX

TABLE 915-1- PAH's

SAR, EC, pH, Boron

TABLE 915-1- Metals

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

Remarks:

Samples returned via:

UPS FedEx Courier

Tracking #

5755 8084 9808

pH Temp

Flow Other

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
If Applicable
VOA Zero Headspace: ☒ Y ☐ N
Preservation Correct/Checked: ☒ Y ☐ N

Relinquished by: (Signature)

Date: 5/23/22

Time: 1340

Received by: (Signature)

Trip Blank Received: Yes/No
HCL/MeOH
TBR

Relinquished by: (Signature)

Date: 5/23/22

Time: 1700

Received by: (Signature)

Temp: 19.7°C Bottles Received: 3
1.3 + 0 = 1.3

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 5/24/22 Time: 0900

Hold:

Condition:
NCF / OK

Caerus Oil and Gas

Sample Delivery Group: L1525093
Samples Received: 08/13/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20220811-T73-11G (S. PIT-C) @ 9-11' L1525093-01 Solid

Collected by
Kelly Malone

Collected date/time
08/11/22 13:50

Received date/time
08/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912651	1	08/19/22 14:54	08/19/22 14:54	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1915458	1	08/24/22 22:16	08/26/22 15:05	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1912319	1	08/17/22 13:00	08/17/22 16:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1913468	1	08/19/22 11:18	08/21/22 13:03	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1912160	1	08/18/22 14:24	08/19/22 14:43	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1911328	1	08/21/22 22:26	08/23/22 10:29	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912162	5	08/18/22 14:26	08/19/22 14:17	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1911391	1	08/13/22 16:51	08/17/22 02:08	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1911497	1	08/13/22 16:51	08/16/22 12:12	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1911373	1	08/17/22 08:54	08/17/22 15:58	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1911370	1	08/16/22 09:22	08/16/22 16:27	AGW	Mt. Juliet, TN

20220811-T73-11G (S. PIT-C) @ 15-17' L1525093-02 Solid

Collected by
Kelly Malone

Collected date/time
08/11/22 14:10

Received date/time
08/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912651	1	08/19/22 14:57	08/19/22 14:57	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1922470	1	09/07/22 13:04	09/08/22 10:20	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1912280	1	08/17/22 13:34	08/17/22 15:34	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1920339	1	09/02/22 08:38	09/03/22 10:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1912160	1	08/18/22 14:24	08/19/22 14:46	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1911328	1	08/21/22 22:26	08/23/22 10:32	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912162	5	08/18/22 14:26	08/19/22 14:21	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1911391	1	08/13/22 16:51	08/17/22 02:31	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1911497	1	08/13/22 16:51	08/16/22 12:31	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1911373	1	08/17/22 08:54	08/17/22 14:00	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1911370	1	08/16/22 09:22	08/16/22 17:20	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	7.39		1	08/19/2022 14:54	WG1912651

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	08/26/2022 15:05	WG1915458

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.94	T8	1	08/17/2022 16:00	WG1912319

Sample Narrative:

L1525093-01 WG1912319: 8.94 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	327		10.0	1	08/21/2022 13:03	WG1913468

Sample Narrative:

L1525093-01 WG1913468: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	168		0.500	1	08/19/2022 14:43	WG1912160
Cadmium	ND		0.500	1	08/19/2022 14:43	WG1912160
Copper	13.7		2.00	1	08/19/2022 14:43	WG1912160
Lead	12.4		0.500	1	08/19/2022 14:43	WG1912160
Nickel	15.7		2.00	1	08/19/2022 14:43	WG1912160
Selenium	ND		2.00	1	08/19/2022 14:43	WG1912160
Silver	ND		1.00	1	08/19/2022 14:43	WG1912160
Zinc	45.6		5.00	1	08/19/2022 14:43	WG1912160

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.228		0.200	1	08/23/2022 10:29	WG1911328

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.27		1.00	5	08/19/2022 14:17	WG1912162

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/17/2022 02:08	WG1911391
(S) a,a,a-Trifluorotoluene(FID)	108		77.0-120		08/17/2022 02:08	WG1911391



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/16/2022 12:12	WG1911497
Toluene	ND		0.00500	1	08/16/2022 12:12	WG1911497
Ethylbenzene	ND		0.00250	1	08/16/2022 12:12	WG1911497
Xylenes, Total	ND		0.00650	1	08/16/2022 12:12	WG1911497
1,2,4-Trimethylbenzene	ND		0.00500	1	08/16/2022 12:12	WG1911497
1,3,5-Trimethylbenzene	ND		0.00500	1	08/16/2022 12:12	WG1911497
(S) Toluene-d8	107		75.0-131		08/16/2022 12:12	WG1911497
(S) 4-Bromofluorobenzene	97.2		67.0-138		08/16/2022 12:12	WG1911497
(S) 1,2-Dichloroethane-d4	98.9		70.0-130		08/16/2022 12:12	WG1911497

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/17/2022 15:58	WG1911373
C28-C36 Motor Oil Range	ND		4.00	1	08/17/2022 15:58	WG1911373
(S) o-Terphenyl	49.2		18.0-148		08/17/2022 15:58	WG1911373

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Anthracene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Benzo(a)anthracene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Benzo(b)fluoranthene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Benzo(k)fluoranthene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Benzo(a)pyrene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Chrysene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Dibenz(a,h)anthracene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Fluoranthene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Fluorene	ND		0.00600	1	08/16/2022 16:27	WG1911370
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/16/2022 16:27	WG1911370
1-Methylnaphthalene	ND		0.0200	1	08/16/2022 16:27	WG1911370
2-Methylnaphthalene	ND		0.0200	1	08/16/2022 16:27	WG1911370
Naphthalene	ND		0.0200	1	08/16/2022 16:27	WG1911370
Pyrene	ND		0.00600	1	08/16/2022 16:27	WG1911370
(S) p-Terphenyl-d14	84.3		23.0-120		08/16/2022 16:27	WG1911370
(S) Nitrobenzene-d5	79.8		14.0-149		08/16/2022 16:27	WG1911370
(S) 2-Fluorobiphenyl	77.1		34.0-125		08/16/2022 16:27	WG1911370

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	9.60		1	08/19/2022 14:57	WG1912651

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND	J5	1.00	1	09/08/2022 10:20	WG1922470

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.41	T8	1	08/17/2022 15:34	WG1912280

Sample Narrative:

L1525093-02 WG1912280: 8.41 at 22.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1360		10.0	1	09/03/2022 10:42	WG1920339

Sample Narrative:

L1525093-02 WG1920339: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	148		0.500	1	08/19/2022 14:46	WG1912160
Cadmium	ND		0.500	1	08/19/2022 14:46	WG1912160
Copper	14.9		2.00	1	08/19/2022 14:46	WG1912160
Lead	13.6		0.500	1	08/19/2022 14:46	WG1912160
Nickel	13.9		2.00	1	08/19/2022 14:46	WG1912160
Selenium	ND		2.00	1	08/19/2022 14:46	WG1912160
Silver	ND		1.00	1	08/19/2022 14:46	WG1912160
Zinc	40.2		5.00	1	08/19/2022 14:46	WG1912160

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

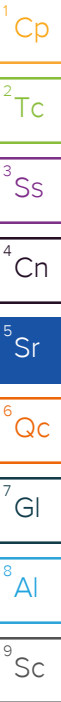
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.203		0.200	1	08/23/2022 10:32	WG1911328

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.28		1.00	5	08/19/2022 14:21	WG1912162

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/17/2022 02:31	WG1911391
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		08/17/2022 02:31	WG1911391



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/16/2022 12:31	WG1911497
Toluene	ND		0.00500	1	08/16/2022 12:31	WG1911497
Ethylbenzene	ND		0.00250	1	08/16/2022 12:31	WG1911497
Xylenes, Total	ND		0.00650	1	08/16/2022 12:31	WG1911497
1,2,4-Trimethylbenzene	ND		0.00500	1	08/16/2022 12:31	WG1911497
1,3,5-Trimethylbenzene	ND		0.00500	1	08/16/2022 12:31	WG1911497
(S) Toluene-d8	105		75.0-131		08/16/2022 12:31	WG1911497
(S) 4-Bromofluorobenzene	96.4		67.0-138		08/16/2022 12:31	WG1911497
(S) 1,2-Dichloroethane-d4	100		70.0-130		08/16/2022 12:31	WG1911497

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/17/2022 14:00	WG1911373
C28-C36 Motor Oil Range	ND		4.00	1	08/17/2022 14:00	WG1911373
(S) o-Terphenyl	42.0		18.0-148		08/17/2022 14:00	WG1911373

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Anthracene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Benzo(a)anthracene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Benzo(b)fluoranthene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Benzo(k)fluoranthene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Benzo(a)pyrene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Chrysene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Dibenz(a,h)anthracene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Fluoranthene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Fluorene	ND		0.00600	1	08/16/2022 17:20	WG1911370
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/16/2022 17:20	WG1911370
1-Methylnaphthalene	ND		0.0200	1	08/16/2022 17:20	WG1911370
2-Methylnaphthalene	ND		0.0200	1	08/16/2022 17:20	WG1911370
Naphthalene	ND		0.0200	1	08/16/2022 17:20	WG1911370
Pyrene	ND		0.00600	1	08/16/2022 17:20	WG1911370
(S) p-Terphenyl-d14	82.8		23.0-120		08/16/2022 17:20	WG1911370
(S) Nitrobenzene-d5	79.9		14.0-149		08/16/2022 17:20	WG1911370
(S) 2-Fluorobiphenyl	81.4		34.0-125		08/16/2022 17:20	WG1911370

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3835055-1 09/08/22 09:57

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

L1525601-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1525601-09 09/08/22 11:01 • (DUP) R3835055-7 09/08/22 11:06

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

L1525875-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525875-02 09/08/22 12:09 • (DUP) R3835055-8 09/08/22 12:14

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	45.1	P1	20

Laboratory Control Sample (LCS)

(LCS) R3835055-2 09/08/22 10:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.8	108	80.0-120	

L1525093-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525093-02 09/08/22 10:20 • (MS) R3835055-3 09/08/22 10:25 • (MSD) R3835055-4 09/08/22 10:30

	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	ND	21.1	20.7	104	101	1	75.0-125			2.12	20

L1525093-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1525093-02 09/08/22 10:20 • (MS) R3835055-6 09/08/22 10:40

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	825	130	50	75.0-125	J5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1525806-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525806-02 08/17/22 15:34 • (DUP) R3827376-2 08/17/22 15:34

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.44	8.44	1	0.000		1

Sample Narrative:

OS: 8.44 at 22.5C

DUP: 8.44 at 22.6C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1525891-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1525891-03 08/17/22 15:34 • (DUP) R3827376-3 08/17/22 15:34

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.34	7.33	1	0.136		1

Sample Narrative:

OS: 7.34 at 22.5C

DUP: 7.33 at 22.1C

Laboratory Control Sample (LCS)

(LCS) R3827376-1 08/17/22 15:34

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

Sample Narrative:

LCS: 9.9 at 22.8C

L1525898-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1525898-01 08/17/22 16:00 • (DUP) R3828249-2 08/17/22 16:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.05	8.05	1	0.000		1

Sample Narrative:

OS: 8.05 at 22.7C

DUP: 8.05 at 22.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1525898-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525898-02 08/17/22 16:00 • (DUP) R3828249-3 08/17/22 16:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.06	8.06	1	0.000		1

Sample Narrative:

OS: 8.06 at 22.6C

DUP: 8.06 at 22.7C

Laboratory Control Sample (LCS)

(LCS) R3828249-1 08/17/22 16:00

	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 23C

Method Blank (MB)

(MB) R3828628-1 08/21/22 13:03

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

L1525034-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1525034-01 08/21/22 13:03 • (DUP) R3828628-3 08/21/22 13:03

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2330	2310	1	0.992		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1525092-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1525092-01 08/21/22 13:03 • (DUP) R3828628-4 08/21/22 13:03

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	379	381	1	0.526		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3828628-2 08/21/22 13:03

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	286	287	100	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3833570-1 09/03/22 10:42

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

L1525098-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525098-02 09/03/22 10:42 • (DUP) R3833570-3 09/03/22 10:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	395	411	1	3.97		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1525847-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1525847-03 09/03/22 10:42 • (DUP) R3833570-4 09/03/22 10:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	187	197	1	5.06		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3833570-2 09/03/22 10:42

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1100	97.8	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3828315-1 08/19/22 14:22

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

Laboratory Control Sample (LCS)

(LCS) R3828315-2 08/19/22 14:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.7	98.7	80.0-120	
Cadmium	100	94.2	94.2	80.0-120	
Copper	100	97.8	97.8	80.0-120	
Lead	100	96.3	96.3	80.0-120	
Nickel	100	96.2	96.2	80.0-120	
Selenium	100	98.0	98.0	80.0-120	
Silver	20.0	17.4	86.8	80.0-120	
Zinc	100	93.6	93.6	80.0-120	

L1525865-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525865-02 08/19/22 14:27 • (MS) R3828315-5 08/19/22 14:35 • (MSD) R3828315-6 08/19/22 14:38

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	912	988	994	76.7	82.6	1	75.0-125			0.599	20
Cadmium	100	0.958	95.1	92.7	94.1	91.8	1	75.0-125			2.49	20
Copper	100	32.1	116	118	84.1	85.7	1	75.0-125			1.35	20
Lead	100	23.9	117	115	92.6	91.6	1	75.0-125			0.943	20
Nickel	100	22.6	117	116	94.0	93.1	1	75.0-125			0.782	20
Selenium	100	ND	97.7	93.6	97.7	93.6	1	75.0-125			4.32	20
Silver	20.0	ND	17.6	17.1	88.0	85.5	1	75.0-125			2.91	20
Zinc	100	70.5	151	152	80.1	81.4	1	75.0-125			0.849	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829415-1 08/23/22 09:52

Analyte	MB Result mg/l	<u>MB Qualifier</u>	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) R3829415-2 08/23/22 09:55 • (LCSD) R3829415-3 08/23/22 09:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.17	1.06	117	106	80.0-120			9.57	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3828227-1 08/19/22 13:51				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3828227-2 08/19/22 13:54					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	95.7	95.7	80.0-120	

L1525865-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525865-02 08/19/22 13:58 • (MS) R3828227-5 08/19/22 14:08 • (MSD) R3828227-6 08/19/22 14:11												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	16.2	106	105	89.6	89.0	5	75.0-125			0.623	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3827477-2 08/16/22 21:51

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)	109			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3827477-1 08/16/22 20:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.82	124	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			115	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3826787-3 08/16/22 08:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	96.6			67.0-138
(S) 1,2-Dichloroethane-d4	98.8			70.0-130

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

(LCS) R3826787-1 08/16/22 07:41 • (LCSD) R3826787-2 08/16/22 08:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.126	0.132	101	106	70.0-123			4.65	20
Toluene	0.125	0.132	0.133	106	106	75.0-121			0.755	20
Ethylbenzene	0.125	0.132	0.138	106	110	74.0-126			4.44	20
Xylenes, Total	0.375	0.382	0.394	102	105	72.0-127			3.09	20
1,2,4-Trimethylbenzene	0.125	0.129	0.135	103	108	70.0-126			4.55	20
1,3,5-Trimethylbenzene	0.125	0.135	0.138	108	110	73.0-127			2.20	20
(S) Toluene-d8				105	104	75.0-131				
(S) 4-Bromofluorobenzene				98.0	96.3	67.0-138				
(S) 1,2-Dichloroethane-d4				107	105	70.0-130				

L1525100-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525100-02 08/16/22 14:06 • (MS) R3826787-4 08/16/22 16:38 • (MSD) R3826787-5 08/16/22 16:57

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	ND	0.102	0.0906	81.6	72.5	1	10.0-149			11.8	37
Toluene	0.125	ND	0.103	0.0952	82.4	76.2	1	10.0-156			7.87	38
Ethylbenzene	0.125	ND	0.105	0.0962	84.0	77.0	1	10.0-160			8.75	38
Xylenes, Total	0.375	ND	0.302	0.289	80.5	77.1	1	10.0-160			4.40	38
1,2,4-Trimethylbenzene	0.125	ND	0.105	0.105	84.0	84.0	1	10.0-160			0.000	36
1,3,5-Trimethylbenzene	0.125	ND	0.106	0.100	84.8	80.0	1	10.0-160			5.83	38
(S) Toluene-d8					104	106		75.0-131				
(S) 4-Bromofluorobenzene					97.2	98.8		67.0-138				
(S) 1,2-Dichloroethane-d4					102	99.6		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3827546-1 08/17/22 13:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.384	J	0.274	4.00
(S) o-Terphenyl	63.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3827546-2 08/17/22 13:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.6	71.2	50.0-150	
(S) o-Terphenyl			84.7	18.0-148	

L1525092-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525092-04 08/17/22 14:52 • (MS) R3827546-3 08/17/22 15:05 • (MSD) R3827546-4 08/17/22 15:18

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 %
C10-C28 Diesel Range	50.0	ND	25.6	33.9	47.1	63.7	1	50.0-150	J6	J3	27.9	20
(S) o-Terphenyl					44.0	68.3		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3826875-2 08/16/22 14:41

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	0.00422	U	0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	78.9			23.0-120
(S) Nitrobenzene-d5	79.6			14.0-149
(S) 2-Fluorobiphenyl	80.3			34.0-125

1
Cp

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Tc

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Ss

4
Cn

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Sr

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Qc

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Gl

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Al

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Sc

Laboratory Control Sample (LCS)

(LCS) R3826875-1 08/16/22 14:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0720	90.0	50.0-120	
Anthracene	0.0800	0.0714	89.3	50.0-126	
Benzo(a)anthracene	0.0800	0.0724	90.5	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0727	90.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0743	92.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0761	95.1	42.0-120	
Chrysene	0.0800	0.0743	92.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0753	94.1	47.0-125	
Fluoranthene	0.0800	0.0729	91.1	49.0-129	
Fluorene	0.0800	0.0726	90.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0777	97.1	46.0-125	
1-Methylnaphthalene	0.0800	0.0707	88.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0716	89.5	50.0-120	
Naphthalene	0.0800	0.0793	99.1	50.0-120	
Pyrene	0.0800	0.0756	94.5	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3826875-1 08/16/22 14:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			96.0	23.0-120	
(S) Nitrobenzene-d5			100	14.0-149	
(S) 2-Fluorobiphenyl			96.8	34.0-125	

L1525093-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525093-01 08/16/22 16:27 • (MS) R3826875-3 08/16/22 16:45 • (MSD) R3826875-4 08/16/22 17:02

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	ND	0.0626	0.0551	78.6	69.2	1	14.0-127			12.7	27
Anthracene	0.0796	ND	0.0636	0.0563	79.9	70.7	1	10.0-145			12.2	30
Benzo(a)anthracene	0.0796	ND	0.0635	0.0554	79.8	69.6	1	10.0-139			13.6	30
Benzo(b)fluoranthene	0.0796	ND	0.0630	0.0566	79.1	71.1	1	10.0-140			10.7	36
Benzo(k)fluoranthene	0.0796	ND	0.0648	0.0566	81.4	71.1	1	10.0-137			13.5	31
Benzo(a)pyrene	0.0796	ND	0.0693	0.0623	87.1	78.3	1	10.0-141			10.6	31
Chrysene	0.0796	ND	0.0670	0.0582	84.2	73.1	1	10.0-145			14.1	30
Dibenz(a,h)anthracene	0.0796	ND	0.0675	0.0596	84.8	74.9	1	10.0-132			12.4	31
Fluoranthene	0.0796	ND	0.0629	0.0549	79.0	69.0	1	10.0-153			13.6	33
Fluorene	0.0796	ND	0.0631	0.0572	79.3	71.9	1	11.0-130			9.81	29
Indeno(1,2,3-cd)pyrene	0.0796	ND	0.0678	0.0609	85.2	76.5	1	10.0-137			10.7	32
1-Methylnaphthalene	0.0796	ND	0.0613	0.0547	77.0	68.7	1	10.0-142			11.4	28
2-Methylnaphthalene	0.0796	ND	0.0634	0.0545	79.6	68.5	1	10.0-137			15.1	28
Naphthalene	0.0796	ND	0.0635	0.0559	79.8	70.2	1	10.0-135			12.7	27
Pyrene	0.0796	ND	0.0646	0.0568	81.2	71.4	1	10.0-148			12.9	35
(S) p-Terphenyl-d14					78.0	68.9		23.0-120				
(S) Nitrobenzene-d5					83.5	76.5		14.0-149				
(S) 2-Fluorobiphenyl					80.6	73.0		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

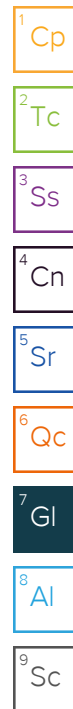
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.



ACCREDITATIONS & LOCATIONS

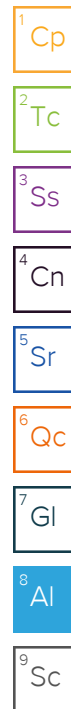
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



Caerus Oil and Gas

Sample Delivery Group: L1525098
Samples Received: 08/13/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20220811-T73-11G (S. PIT-W) @ 6-8' L1525098-01 Solid

Collected by
Kelly Malone

Collected date/time
08/11/22 14:50

Received date/time
08/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912651	1	08/19/22 15:00	08/19/22 15:00	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1915458	1	08/24/22 22:16	08/26/22 15:21	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1912128	1	08/18/22 20:00	08/19/22 00:00	JD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1920339	1	09/02/22 08:38	09/03/22 10:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1912160	1	08/18/22 14:24	08/19/22 14:54	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1911328	1	08/21/22 22:26	08/23/22 10:35	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912162	5	08/18/22 14:26	08/19/22 14:31	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1911391	1	08/13/22 16:51	08/17/22 02:54	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1911497	1	08/13/22 16:51	08/16/22 12:50	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1911373	1	08/17/22 08:54	08/17/22 14:26	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1911370	1	08/16/22 09:22	08/16/22 17:38	AGW	Mt. Juliet, TN



20220811-T73-11G (S. PIT-W) @ 11-13' L1525098-02 Solid

Collected by
Kelly Malone

Collected date/time
08/11/22 15:10

Received date/time
08/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912651	1	08/19/22 21:56	08/19/22 21:56	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1922470	1	09/07/22 13:04	09/08/22 10:46	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1911680	1	08/16/22 13:00	08/17/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1920339	1	09/02/22 08:38	09/03/22 10:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1912160	1	08/18/22 14:24	08/19/22 14:57	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1911328	1	08/21/22 22:26	08/23/22 10:38	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912162	5	08/18/22 14:26	08/19/22 14:34	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1911391	1	08/13/22 16:51	08/17/22 03:17	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1911497	1	08/13/22 16:51	08/16/22 13:09	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1911373	1	08/17/22 08:54	08/17/22 15:32	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1911370	1	08/16/22 09:22	08/16/22 17:55	AGW	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager

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	7.72		1	08/19/2022 15:00	WG1912651

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	08/26/2022 15:21	WG1915458

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.89	T8	1	08/19/2022 00:00	WG1912128

Sample Narrative:

L1525098-01 WG1912128: 8.89 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	278		10.0	1	09/03/2022 10:42	WG1920339

Sample Narrative:

L1525098-01 WG1920339: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	128		0.500	1	08/19/2022 14:54	WG1912160
Cadmium	ND		0.500	1	08/19/2022 14:54	WG1912160
Copper	11.2		2.00	1	08/19/2022 14:54	WG1912160
Lead	11.4		0.500	1	08/19/2022 14:54	WG1912160
Nickel	14.2		2.00	1	08/19/2022 14:54	WG1912160
Selenium	ND		2.00	1	08/19/2022 14:54	WG1912160
Silver	ND		1.00	1	08/19/2022 14:54	WG1912160
Zinc	40.9		5.00	1	08/19/2022 14:54	WG1912160

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

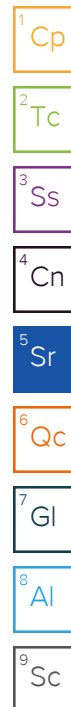
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.390		0.200	1	08/23/2022 10:35	WG1911328

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.35		1.00	5	08/19/2022 14:31	WG1912162

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/17/2022 02:54	WG1911391
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		08/17/2022 02:54	WG1911391



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/16/2022 12:50	WG1911497
Toluene	ND		0.00500	1	08/16/2022 12:50	WG1911497
Ethylbenzene	ND		0.00250	1	08/16/2022 12:50	WG1911497
Xylenes, Total	ND		0.00650	1	08/16/2022 12:50	WG1911497
1,2,4-Trimethylbenzene	ND		0.00500	1	08/16/2022 12:50	WG1911497
1,3,5-Trimethylbenzene	ND		0.00500	1	08/16/2022 12:50	WG1911497
(S) Toluene-d8	104		75.0-131		08/16/2022 12:50	WG1911497
(S) 4-Bromofluorobenzene	97.8		67.0-138		08/16/2022 12:50	WG1911497
(S) 1,2-Dichloroethane-d4	101		70.0-130		08/16/2022 12:50	WG1911497

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.83		4.00	1	08/17/2022 14:26	WG1911373
C28-C36 Motor Oil Range	5.16		4.00	1	08/17/2022 14:26	WG1911373
(S) o-Terphenyl	36.3		18.0-148		08/17/2022 14:26	WG1911373

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Anthracene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Benzo(a)anthracene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Benzo(b)fluoranthene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Benzo(k)fluoranthene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Benzo(a)pyrene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Chrysene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Dibenz(a,h)anthracene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Fluoranthene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Fluorene	ND		0.00600	1	08/16/2022 17:38	WG1911370
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/16/2022 17:38	WG1911370
1-Methylnaphthalene	ND		0.0200	1	08/16/2022 17:38	WG1911370
2-Methylnaphthalene	ND		0.0200	1	08/16/2022 17:38	WG1911370
Naphthalene	ND		0.0200	1	08/16/2022 17:38	WG1911370
Pyrene	ND		0.00600	1	08/16/2022 17:38	WG1911370
(S) p-Terphenyl-d14	63.2		23.0-120		08/16/2022 17:38	WG1911370
(S) Nitrobenzene-d5	78.6		14.0-149		08/16/2022 17:38	WG1911370
(S) 2-Fluorobiphenyl	59.7		34.0-125		08/16/2022 17:38	WG1911370

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	9.77		1	08/19/2022 21:56	WG1912651

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/08/2022 10:46	WG1922470

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.00	T8	1	08/17/2022 11:00	WG1911680

Sample Narrative:

L1525098-02 WG1911680: 9 at 21.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	395		10.0	1	09/03/2022 10:42	WG1920339

Sample Narrative:

L1525098-02 WG1920339: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	165		0.500	1	08/19/2022 14:57	WG1912160
Cadmium	ND		0.500	1	08/19/2022 14:57	WG1912160
Copper	15.3		2.00	1	08/19/2022 14:57	WG1912160
Lead	13.0		0.500	1	08/19/2022 14:57	WG1912160
Nickel	16.7		2.00	1	08/19/2022 14:57	WG1912160
Selenium	ND		2.00	1	08/19/2022 14:57	WG1912160
Silver	ND		1.00	1	08/19/2022 14:57	WG1912160
Zinc	49.5		5.00	1	08/19/2022 14:57	WG1912160

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

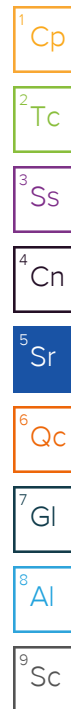
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.343		0.200	1	08/23/2022 10:38	WG1911328

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.26		1.00	5	08/19/2022 14:34	WG1912162

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/17/2022 03:17	WG1911391
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	109		77.0-120		08/17/2022 03:17	WG1911391



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/16/2022 13:09	WG1911497
Toluene	ND		0.00500	1	08/16/2022 13:09	WG1911497
Ethylbenzene	ND		0.00250	1	08/16/2022 13:09	WG1911497
Xylenes, Total	ND		0.00650	1	08/16/2022 13:09	WG1911497
1,2,4-Trimethylbenzene	ND		0.00500	1	08/16/2022 13:09	WG1911497
1,3,5-Trimethylbenzene	ND		0.00500	1	08/16/2022 13:09	WG1911497
(S) Toluene-d8	105		75.0-131		08/16/2022 13:09	WG1911497
(S) 4-Bromofluorobenzene	97.2		67.0-138		08/16/2022 13:09	WG1911497
(S) 1,2-Dichloroethane-d4	103		70.0-130		08/16/2022 13:09	WG1911497

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.23		4.00	1	08/17/2022 15:32	WG1911373
C28-C36 Motor Oil Range	4.89		4.00	1	08/17/2022 15:32	WG1911373
(S) o-Terphenyl	48.2		18.0-148		08/17/2022 15:32	WG1911373

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Anthracene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Benzo(a)anthracene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Benzo(b)fluoranthene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Benzo(k)fluoranthene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Benzo(a)pyrene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Chrysene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Dibenz(a,h)anthracene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Fluoranthene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Fluorene	ND		0.00600	1	08/16/2022 17:55	WG1911370
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/16/2022 17:55	WG1911370
1-Methylnaphthalene	ND		0.0200	1	08/16/2022 17:55	WG1911370
2-Methylnaphthalene	ND		0.0200	1	08/16/2022 17:55	WG1911370
Naphthalene	ND		0.0200	1	08/16/2022 17:55	WG1911370
Pyrene	ND		0.00600	1	08/16/2022 17:55	WG1911370
(S) p-Terphenyl-d14	69.8		23.0-120		08/16/2022 17:55	WG1911370
(S) Nitrobenzene-d5	82.7		14.0-149		08/16/2022 17:55	WG1911370
(S) 2-Fluorobiphenyl	71.5		34.0-125		08/16/2022 17:55	WG1911370

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3835055-1 09/08/22 09:57

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

L1525601-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1525601-09 09/08/22 11:01 • (DUP) R3835055-7 09/08/22 11:06

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

L1525875-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525875-02 09/08/22 12:09 • (DUP) R3835055-8 09/08/22 12:14

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	45.1	P1	20

Laboratory Control Sample (LCS)

(LCS) R3835055-2 09/08/22 10:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.8	108	80.0-120	

L1525093-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525093-02 09/08/22 10:20 • (MS) R3835055-3 09/08/22 10:25 • (MSD) R3835055-4 09/08/22 10:30

	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	ND	21.1	20.7	104	101	1	75.0-125			2.12	20

L1525093-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1525093-02 09/08/22 10:20 • (MS) R3835055-6 09/08/22 10:40

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	825	130	50	75.0-125	J5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1524773-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1524773-03 08/17/22 11:00 • (DUP) R3827190-3 08/17/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	6.61	6.58	1	0.455		1

Sample Narrative:

OS: 6.61 at 21.2C

DUP: 6.58 at 21.3C

Laboratory Control Sample (LCS)

(LCS) R3827190-1 08/17/22 11:00

	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 21.9C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1525099-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1525099-01 08/19/22 00:00 • (DUP) R3827984-2 08/19/22 00:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	9.44	9.48	1	0.423		1

Sample Narrative:

OS: 9.44 at 23.7C

DUP: 9.48 at 23.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1525813-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1525813-04 08/19/22 00:00 • (DUP) R3827984-3 08/19/22 00:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.46	8.51	1	0.589		1

Sample Narrative:

OS: 8.46 at 22.8C

DUP: 8.51 at 22.7C

Laboratory Control Sample (LCS)

(LCS) R3827984-1 08/19/22 00:00

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

Sample Narrative:

LCS: 9.92 at 21.6C

Method Blank (MB)

(MB) R3833570-1 09/03/22 10:42

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

L1525098-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525098-02 09/03/22 10:42 • (DUP) R3833570-3 09/03/22 10:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	395	411	1	3.97		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1525847-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1525847-03 09/03/22 10:42 • (DUP) R3833570-4 09/03/22 10:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	187	197	1	5.06		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3833570-2 09/03/22 10:42

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1100	97.8	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3828315-1 08/19/22 14:22

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

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

Laboratory Control Sample (LCS)

(LCS) R3828315-2 08/19/22 14:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.7	98.7	80.0-120	
Cadmium	100	94.2	94.2	80.0-120	
Copper	100	97.8	97.8	80.0-120	
Lead	100	96.3	96.3	80.0-120	
Nickel	100	96.2	96.2	80.0-120	
Selenium	100	98.0	98.0	80.0-120	
Silver	20.0	17.4	86.8	80.0-120	
Zinc	100	93.6	93.6	80.0-120	

7
Gl

8
Al

9
Sc

L1525865-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525865-02 08/19/22 14:27 • (MS) R3828315-5 08/19/22 14:35 • (MSD) R3828315-6 08/19/22 14:38

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	912	988	994	76.7	82.6	1	75.0-125			0.599	20
Cadmium	100	0.958	95.1	92.7	94.1	91.8	1	75.0-125			2.49	20
Copper	100	32.1	116	118	84.1	85.7	1	75.0-125			1.35	20
Lead	100	23.9	117	115	92.6	91.6	1	75.0-125			0.943	20
Nickel	100	22.6	117	116	94.0	93.1	1	75.0-125			0.782	20
Selenium	100	ND	97.7	93.6	97.7	93.6	1	75.0-125			4.32	20
Silver	20.0	ND	17.6	17.1	88.0	85.5	1	75.0-125			2.91	20
Zinc	100	70.5	151	152	80.1	81.4	1	75.0-125			0.849	20

Method Blank (MB)

(MB) R3829415-1 08/23/22 09:52

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) R3829415-2 08/23/22 09:55 • (LCSD) R3829415-3 08/23/22 09:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.17	1.06	117	106	80.0-120			9.57	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3828227-1 08/19/22 13:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3828227-2 08/19/22 13:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.7	95.7	80.0-120	

L1525865-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525865-02 08/19/22 13:58 • (MS) R3828227-5 08/19/22 14:08 • (MSD) R3828227-6 08/19/22 14:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	16.2	106	105	89.6	89.0	5	75.0-125			0.623	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3827477-2 08/16/22 21:51

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)	109			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3827477-1 08/16/22 20:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.82	124	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			115	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3826787-3 08/16/22 08:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	96.6			67.0-138
(S) 1,2-Dichloroethane-d4	98.8			70.0-130

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

(LCS) R3826787-1 08/16/22 07:41 • (LCSD) R3826787-2 08/16/22 08:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.126	0.132	101	106	70.0-123			4.65	20
Toluene	0.125	0.132	0.133	106	106	75.0-121			0.755	20
Ethylbenzene	0.125	0.132	0.138	106	110	74.0-126			4.44	20
Xylenes, Total	0.375	0.382	0.394	102	105	72.0-127			3.09	20
1,2,4-Trimethylbenzene	0.125	0.129	0.135	103	108	70.0-126			4.55	20
1,3,5-Trimethylbenzene	0.125	0.135	0.138	108	110	73.0-127			2.20	20
(S) Toluene-d8				105	104	75.0-131				
(S) 4-Bromofluorobenzene				98.0	96.3	67.0-138				
(S) 1,2-Dichloroethane-d4				107	105	70.0-130				

L1525100-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525100-02 08/16/22 14:06 • (MS) R3826787-4 08/16/22 16:38 • (MSD) R3826787-5 08/16/22 16:57

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	ND	0.102	0.0906	81.6	72.5	1	10.0-149			11.8	37
Toluene	0.125	ND	0.103	0.0952	82.4	76.2	1	10.0-156			7.87	38
Ethylbenzene	0.125	ND	0.105	0.0962	84.0	77.0	1	10.0-160			8.75	38
Xylenes, Total	0.375	ND	0.302	0.289	80.5	77.1	1	10.0-160			4.40	38
1,2,4-Trimethylbenzene	0.125	ND	0.105	0.105	84.0	84.0	1	10.0-160			0.000	36
1,3,5-Trimethylbenzene	0.125	ND	0.106	0.100	84.8	80.0	1	10.0-160			5.83	38
(S) Toluene-d8					104	106		75.0-131				
(S) 4-Bromofluorobenzene					97.2	98.8		67.0-138				
(S) 1,2-Dichloroethane-d4					102	99.6		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3827546-1 08/17/22 13:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.384	J	0.274	4.00
(S) o-Terphenyl	63.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3827546-2 08/17/22 13:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.6	71.2	50.0-150	
(S) o-Terphenyl			84.7	18.0-148	

L1525092-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525092-04 08/17/22 14:52 • (MS) R3827546-3 08/17/22 15:05 • (MSD) R3827546-4 08/17/22 15:18

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 %
C10-C28 Diesel Range	50.0	ND	25.6	33.9	47.1	63.7	1	50.0-150	J6	J3	27.9	20
(S) o-Terphenyl					44.0	68.3		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3826875-2 08/16/22 14:41

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	0.00422	U	0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	78.9			23.0-120
(S) Nitrobenzene-d5	79.6			14.0-149
(S) 2-Fluorobiphenyl	80.3			34.0-125

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS)

(LCS) R3826875-1 08/16/22 14:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0720	90.0	50.0-120	
Anthracene	0.0800	0.0714	89.3	50.0-126	
Benzo(a)anthracene	0.0800	0.0724	90.5	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0727	90.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0743	92.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0761	95.1	42.0-120	
Chrysene	0.0800	0.0743	92.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0753	94.1	47.0-125	
Fluoranthene	0.0800	0.0729	91.1	49.0-129	
Fluorene	0.0800	0.0726	90.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0777	97.1	46.0-125	
1-Methylnaphthalene	0.0800	0.0707	88.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0716	89.5	50.0-120	
Naphthalene	0.0800	0.0793	99.1	50.0-120	
Pyrene	0.0800	0.0756	94.5	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3826875-1 08/16/22 14:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			96.0	23.0-120	
(S) Nitrobenzene-d5			100	14.0-149	
(S) 2-Fluorobiphenyl			96.8	34.0-125	

L1525093-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525093-01 08/16/22 16:27 • (MS) R3826875-3 08/16/22 16:45 • (MSD) R3826875-4 08/16/22 17:02

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	ND	0.0626	0.0551	78.6	69.2	1	14.0-127			12.7	27
Anthracene	0.0796	ND	0.0636	0.0563	79.9	70.7	1	10.0-145			12.2	30
Benzo(a)anthracene	0.0796	ND	0.0635	0.0554	79.8	69.6	1	10.0-139			13.6	30
Benzo(b)fluoranthene	0.0796	ND	0.0630	0.0566	79.1	71.1	1	10.0-140			10.7	36
Benzo(k)fluoranthene	0.0796	ND	0.0648	0.0566	81.4	71.1	1	10.0-137			13.5	31
Benzo(a)pyrene	0.0796	ND	0.0693	0.0623	87.1	78.3	1	10.0-141			10.6	31
Chrysene	0.0796	ND	0.0670	0.0582	84.2	73.1	1	10.0-145			14.1	30
Dibenz(a,h)anthracene	0.0796	ND	0.0675	0.0596	84.8	74.9	1	10.0-132			12.4	31
Fluoranthene	0.0796	ND	0.0629	0.0549	79.0	69.0	1	10.0-153			13.6	33
Fluorene	0.0796	ND	0.0631	0.0572	79.3	71.9	1	11.0-130			9.81	29
Indeno(1,2,3-cd)pyrene	0.0796	ND	0.0678	0.0609	85.2	76.5	1	10.0-137			10.7	32
1-Methylnaphthalene	0.0796	ND	0.0613	0.0547	77.0	68.7	1	10.0-142			11.4	28
2-Methylnaphthalene	0.0796	ND	0.0634	0.0545	79.6	68.5	1	10.0-137			15.1	28
Naphthalene	0.0796	ND	0.0635	0.0559	79.8	70.2	1	10.0-135			12.7	27
Pyrene	0.0796	ND	0.0646	0.0568	81.2	71.4	1	10.0-148			12.9	35
(S) p-Terphenyl-d14					78.0	68.9		23.0-120				
(S) Nitrobenzene-d5					83.5	76.5		14.0-149				
(S) 2-Fluorobiphenyl					80.6	73.0		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

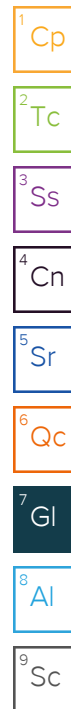
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



Caerus Oil and Gas

Sample Delivery Group: L1525099
Samples Received: 08/13/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20220811-T73-11G (S. PIT-S) @ 7-9' L1525099-01 Solid

Collected by
Kelly Malone

Collected date/time
08/11/22 15:50

Received date/time
08/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912652	1	08/20/22 12:05	08/20/22 12:05	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1915458	1	08/24/22 22:16	08/26/22 15:31	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1912128	1	08/18/22 20:00	08/19/22 00:00	JD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1920339	1	09/02/22 08:38	09/03/22 10:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1912160	1	08/18/22 14:24	08/19/22 14:59	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1911328	1	08/21/22 22:26	08/23/22 10:41	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912162	5	08/18/22 14:26	08/19/22 14:38	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1911391	1	08/13/22 16:51	08/17/22 03:40	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1911497	1	08/13/22 16:51	08/16/22 13:28	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1911373	1	08/17/22 08:54	08/17/22 13:47	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1911370	1	08/16/22 09:22	08/16/22 18:13	AGW	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

20220811-T73-11G (S. PIT-S) @ 12-14' L1525099-02 Solid

Collected by
Kelly Malone

Collected date/time
08/11/22 16:10

Received date/time
08/13/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912652	1	08/20/22 12:08	08/20/22 12:08	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1915458	1	08/24/22 22:16	08/26/22 15:37	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1912128	1	08/18/22 20:00	08/19/22 00:00	JD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1920339	1	09/02/22 08:38	09/03/22 10:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1912160	1	08/18/22 14:24	08/19/22 15:02	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1911328	1	08/21/22 22:26	08/23/22 10:43	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912162	5	08/18/22 14:26	08/19/22 14:41	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1911391	1	08/13/22 16:51	08/17/22 04:03	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1911497	1	08/13/22 16:51	08/16/22 13:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1911373	1	08/17/22 08:54	08/17/22 14:13	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1911370	1	08/16/22 09:22	08/16/22 18:31	AGW	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.30		1	08/20/2022 12:05	WG1912652

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	08/26/2022 15:31	WG1915458

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.44	T8	1	08/19/2022 00:00	WG1912128

Sample Narrative:

L1525099-01 WG1912128: 9.44 at 23.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	351		10.0	1	09/03/2022 10:42	WG1920339

Sample Narrative:

L1525099-01 WG1920339: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	164		0.500	1	08/19/2022 14:59	WG1912160
Cadmium	ND		0.500	1	08/19/2022 14:59	WG1912160
Copper	12.5		2.00	1	08/19/2022 14:59	WG1912160
Lead	12.3		0.500	1	08/19/2022 14:59	WG1912160
Nickel	13.7		2.00	1	08/19/2022 14:59	WG1912160
Selenium	ND		2.00	1	08/19/2022 14:59	WG1912160
Silver	ND		1.00	1	08/19/2022 14:59	WG1912160
Zinc	45.4		5.00	1	08/19/2022 14:59	WG1912160

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

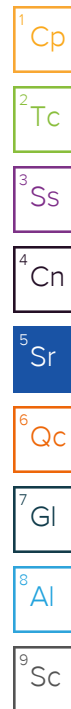
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/23/2022 10:41	WG1911328

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.85		1.00	5	08/19/2022 14:38	WG1912162

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/17/2022 03:40	WG1911391
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		08/17/2022 03:40	WG1911391



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/16/2022 13:28	WG1911497
Toluene	ND		0.00500	1	08/16/2022 13:28	WG1911497
Ethylbenzene	ND		0.00250	1	08/16/2022 13:28	WG1911497
Xylenes, Total	ND		0.00650	1	08/16/2022 13:28	WG1911497
1,2,4-Trimethylbenzene	ND		0.00500	1	08/16/2022 13:28	WG1911497
1,3,5-Trimethylbenzene	ND		0.00500	1	08/16/2022 13:28	WG1911497
(S) Toluene-d8	105		75.0-131		08/16/2022 13:28	WG1911497
(S) 4-Bromofluorobenzene	95.6		67.0-138		08/16/2022 13:28	WG1911497
(S) 1,2-Dichloroethane-d4	97.6		70.0-130		08/16/2022 13:28	WG1911497

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/17/2022 13:47	WG1911373
C28-C36 Motor Oil Range	ND		4.00	1	08/17/2022 13:47	WG1911373
(S) o-Terphenyl	32.7		18.0-148		08/17/2022 13:47	WG1911373

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Anthracene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Benzo(a)anthracene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Benzo(b)fluoranthene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Benzo(k)fluoranthene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Benzo(a)pyrene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Chrysene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Dibenz(a,h)anthracene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Fluoranthene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Fluorene	ND		0.00600	1	08/16/2022 18:13	WG1911370
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/16/2022 18:13	WG1911370
1-Methylnaphthalene	ND		0.0200	1	08/16/2022 18:13	WG1911370
2-Methylnaphthalene	ND		0.0200	1	08/16/2022 18:13	WG1911370
Naphthalene	ND		0.0200	1	08/16/2022 18:13	WG1911370
Pyrene	ND		0.00600	1	08/16/2022 18:13	WG1911370
(S) p-Terphenyl-d14	72.3		23.0-120		08/16/2022 18:13	WG1911370
(S) Nitrobenzene-d5	80.0		14.0-149		08/16/2022 18:13	WG1911370
(S) 2-Fluorobiphenyl	66.5		34.0-125		08/16/2022 18:13	WG1911370

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	9.24		1	08/20/2022 12:08	WG1912652

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	08/26/2022 15:37	WG1915458

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.45	T8	1	08/19/2022 00:00	WG1912128

Sample Narrative:

L1525099-02 WG1912128: 9.45 at 23.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	366		10.0	1	09/03/2022 10:42	WG1920339

Sample Narrative:

L1525099-02 WG1920339: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	199		0.500	1	08/19/2022 15:02	WG1912160
Cadmium	ND		0.500	1	08/19/2022 15:02	WG1912160
Copper	17.0		2.00	1	08/19/2022 15:02	WG1912160
Lead	14.4		0.500	1	08/19/2022 15:02	WG1912160
Nickel	18.2		2.00	1	08/19/2022 15:02	WG1912160
Selenium	ND		2.00	1	08/19/2022 15:02	WG1912160
Silver	ND		1.00	1	08/19/2022 15:02	WG1912160
Zinc	52.0		5.00	1	08/19/2022 15:02	WG1912160

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/23/2022 10:43	WG1911328

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.09		1.00	5	08/19/2022 14:41	WG1912162

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/17/2022 04:03	WG1911391
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		08/17/2022 04:03	WG1911391

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/16/2022 13:47	WG1911497
Toluene	ND		0.00500	1	08/16/2022 13:47	WG1911497
Ethylbenzene	ND		0.00250	1	08/16/2022 13:47	WG1911497
Xylenes, Total	ND		0.00650	1	08/16/2022 13:47	WG1911497
1,2,4-Trimethylbenzene	ND		0.00500	1	08/16/2022 13:47	WG1911497
1,3,5-Trimethylbenzene	ND		0.00500	1	08/16/2022 13:47	WG1911497
(S) Toluene-d8	105		75.0-131		08/16/2022 13:47	WG1911497
(S) 4-Bromofluorobenzene	96.7		67.0-138		08/16/2022 13:47	WG1911497
(S) 1,2-Dichloroethane-d4	99.7		70.0-130		08/16/2022 13:47	WG1911497

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/17/2022 14:13	WG1911373
C28-C36 Motor Oil Range	5.57		4.00	1	08/17/2022 14:13	WG1911373
(S) o-Terphenyl	45.2		18.0-148		08/17/2022 14:13	WG1911373

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Anthracene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Benzo(a)anthracene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Benzo(b)fluoranthene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Benzo(k)fluoranthene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Benzo(a)pyrene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Chrysene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Dibenz(a,h)anthracene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Fluoranthene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Fluorene	ND		0.00600	1	08/16/2022 18:31	WG1911370
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/16/2022 18:31	WG1911370
1-Methylnaphthalene	ND		0.0200	1	08/16/2022 18:31	WG1911370
2-Methylnaphthalene	ND		0.0200	1	08/16/2022 18:31	WG1911370
Naphthalene	ND		0.0200	1	08/16/2022 18:31	WG1911370
Pyrene	ND		0.00600	1	08/16/2022 18:31	WG1911370
(S) p-Terphenyl-d14	83.1		23.0-120		08/16/2022 18:31	WG1911370
(S) Nitrobenzene-d5	83.9		14.0-149		08/16/2022 18:31	WG1911370
(S) 2-Fluorobiphenyl	79.9		34.0-125		08/16/2022 18:31	WG1911370

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3834107-1 08/26/22 12:59

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Hexavalent Chromium	1.64		0.255	1.00

L1524574-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1524574-02 08/26/22 14:03 • (DUP) R3834107-7 08/26/22 14:08

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

Laboratory Control Sample (LCS)

(LCS) R3834107-2 08/26/22 13:06

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	11.3	113	80.0-120	

L1524574-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1524574-01 08/26/22 13:27 • (MS) R3834107-3 08/26/22 13:32 • (MSD) R3834107-4 08/26/22 13:37

	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	ND	19.3	17.8	96.7	88.8	1	75.0-125			8.55	20

L1524574-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1524574-01 08/26/22 13:27 • (MS) R3834107-6 08/26/22 13:48

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	641	ND	580	90.4	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1525099-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1525099-01 08/19/22 00:00 • (DUP) R3827984-2 08/19/22 00:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	9.44	9.48	1	0.423		1

Sample Narrative:

OS: 9.44 at 23.7C

DUP: 9.48 at 23.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1525813-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1525813-04 08/19/22 00:00 • (DUP) R3827984-3 08/19/22 00:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.46	8.51	1	0.589		1

Sample Narrative:

OS: 8.46 at 22.8C

DUP: 8.51 at 22.7C

Laboratory Control Sample (LCS)

(LCS) R3827984-1 08/19/22 00:00

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

Sample Narrative:

LCS: 9.92 at 21.6C

Method Blank (MB)

(MB) R3833570-1 09/03/22 10:42

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

L1525098-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1525098-02 09/03/22 10:42 • (DUP) R3833570-3 09/03/22 10:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	395	411	1	3.97		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1525847-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1525847-03 09/03/22 10:42 • (DUP) R3833570-4 09/03/22 10:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	187	197	1	5.06		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3833570-2 09/03/22 10:42

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1100	97.8	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3828315-1 08/19/22 14:22

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

Laboratory Control Sample (LCS)

(LCS) R3828315-2 08/19/22 14:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.7	98.7	80.0-120	
Cadmium	100	94.2	94.2	80.0-120	
Copper	100	97.8	97.8	80.0-120	
Lead	100	96.3	96.3	80.0-120	
Nickel	100	96.2	96.2	80.0-120	
Selenium	100	98.0	98.0	80.0-120	
Silver	20.0	17.4	86.8	80.0-120	
Zinc	100	93.6	93.6	80.0-120	

L1525865-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525865-02 08/19/22 14:27 • (MS) R3828315-5 08/19/22 14:35 • (MSD) R3828315-6 08/19/22 14:38

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	912	988	994	76.7	82.6	1	75.0-125			0.599	20
Cadmium	100	0.958	95.1	92.7	94.1	91.8	1	75.0-125			2.49	20
Copper	100	32.1	116	118	84.1	85.7	1	75.0-125			1.35	20
Lead	100	23.9	117	115	92.6	91.6	1	75.0-125			0.943	20
Nickel	100	22.6	117	116	94.0	93.1	1	75.0-125			0.782	20
Selenium	100	ND	97.7	93.6	97.7	93.6	1	75.0-125			4.32	20
Silver	20.0	ND	17.6	17.1	88.0	85.5	1	75.0-125			2.91	20
Zinc	100	70.5	151	152	80.1	81.4	1	75.0-125			0.849	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3829415-1 08/23/22 09:52

Analyte	MB Result mg/l	<u>MB Qualifier</u>	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) R3829415-2 08/23/22 09:55 • (LCSD) R3829415-3 08/23/22 09:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.17	1.06	117	106	80.0-120			9.57	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3828227-1 08/19/22 13:51				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3828227-2 08/19/22 13:54					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	95.7	95.7	80.0-120	

L1525865-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525865-02 08/19/22 13:58 • (MS) R3828227-5 08/19/22 14:08 • (MSD) R3828227-6 08/19/22 14:11												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	16.2	106	105	89.6	89.0	5	75.0-125			0.623	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3827477-2 08/16/22 21:51

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)	109			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3827477-1 08/16/22 20:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.82	124	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			115	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) R3826787-3 08/16/22 08:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	96.6			67.0-138
(S) 1,2-Dichloroethane-d4	98.8			70.0-130

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

(LCS) R3826787-1 08/16/22 07:41 • (LCSD) R3826787-2 08/16/22 08:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.126	0.132	101	106	70.0-123			4.65	20
Toluene	0.125	0.132	0.133	106	106	75.0-121			0.755	20
Ethylbenzene	0.125	0.132	0.138	106	110	74.0-126			4.44	20
Xylenes, Total	0.375	0.382	0.394	102	105	72.0-127			3.09	20
1,2,4-Trimethylbenzene	0.125	0.129	0.135	103	108	70.0-126			4.55	20
1,3,5-Trimethylbenzene	0.125	0.135	0.138	108	110	73.0-127			2.20	20
(S) Toluene-d8				105	104	75.0-131				
(S) 4-Bromofluorobenzene				98.0	96.3	67.0-138				
(S) 1,2-Dichloroethane-d4				107	105	70.0-130				

L1525100-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525100-02 08/16/22 14:06 • (MS) R3826787-4 08/16/22 16:38 • (MSD) R3826787-5 08/16/22 16:57

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	ND	0.102	0.0906	81.6	72.5	1	10.0-149			11.8	37
Toluene	0.125	ND	0.103	0.0952	82.4	76.2	1	10.0-156			7.87	38
Ethylbenzene	0.125	ND	0.105	0.0962	84.0	77.0	1	10.0-160			8.75	38
Xylenes, Total	0.375	ND	0.302	0.289	80.5	77.1	1	10.0-160			4.40	38
1,2,4-Trimethylbenzene	0.125	ND	0.105	0.105	84.0	84.0	1	10.0-160			0.000	36
1,3,5-Trimethylbenzene	0.125	ND	0.106	0.100	84.8	80.0	1	10.0-160			5.83	38
(S) Toluene-d8					104	106		75.0-131				
(S) 4-Bromofluorobenzene					97.2	98.8		67.0-138				
(S) 1,2-Dichloroethane-d4					102	99.6		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3827546-1 08/17/22 13:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.384	J	0.274	4.00
(S) o-Terphenyl	63.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3827546-2 08/17/22 13:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.6	71.2	50.0-150	
(S) o-Terphenyl			84.7	18.0-148	

L1525092-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525092-04 08/17/22 14:52 • (MS) R3827546-3 08/17/22 15:05 • (MSD) R3827546-4 08/17/22 15:18

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 %
C10-C28 Diesel Range	50.0	ND	25.6	33.9	47.1	63.7	1	50.0-150	J6	J3	27.9	20
(S) o-Terphenyl					44.0	68.3		18.0-148				

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Al

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Sc

Method Blank (MB)

(MB) R3826875-2 08/16/22 14:41

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	0.00422	U	0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	78.9			23.0-120
(S) Nitrobenzene-d5	79.6			14.0-149
(S) 2-Fluorobiphenyl	80.3			34.0-125

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3826875-1 08/16/22 14:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0720	90.0	50.0-120	
Anthracene	0.0800	0.0714	89.3	50.0-126	
Benzo(a)anthracene	0.0800	0.0724	90.5	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0727	90.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0743	92.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0761	95.1	42.0-120	
Chrysene	0.0800	0.0743	92.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0753	94.1	47.0-125	
Fluoranthene	0.0800	0.0729	91.1	49.0-129	
Fluorene	0.0800	0.0726	90.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0777	97.1	46.0-125	
1-Methylnaphthalene	0.0800	0.0707	88.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0716	89.5	50.0-120	
Naphthalene	0.0800	0.0793	99.1	50.0-120	
Pyrene	0.0800	0.0756	94.5	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3826875-1 08/16/22 14:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			96.0	23.0-120	
(S) Nitrobenzene-d5			100	14.0-149	
(S) 2-Fluorobiphenyl			96.8	34.0-125	

L1525093-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1525093-01 08/16/22 16:27 • (MS) R3826875-3 08/16/22 16:45 • (MSD) R3826875-4 08/16/22 17:02

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	ND	0.0626	0.0551	78.6	69.2	1	14.0-127			12.7	27
Anthracene	0.0796	ND	0.0636	0.0563	79.9	70.7	1	10.0-145			12.2	30
Benzo(a)anthracene	0.0796	ND	0.0635	0.0554	79.8	69.6	1	10.0-139			13.6	30
Benzo(b)fluoranthene	0.0796	ND	0.0630	0.0566	79.1	71.1	1	10.0-140			10.7	36
Benzo(k)fluoranthene	0.0796	ND	0.0648	0.0566	81.4	71.1	1	10.0-137			13.5	31
Benzo(a)pyrene	0.0796	ND	0.0693	0.0623	87.1	78.3	1	10.0-141			10.6	31
Chrysene	0.0796	ND	0.0670	0.0582	84.2	73.1	1	10.0-145			14.1	30
Dibenz(a,h)anthracene	0.0796	ND	0.0675	0.0596	84.8	74.9	1	10.0-132			12.4	31
Fluoranthene	0.0796	ND	0.0629	0.0549	79.0	69.0	1	10.0-153			13.6	33
Fluorene	0.0796	ND	0.0631	0.0572	79.3	71.9	1	11.0-130			9.81	29
Indeno(1,2,3-cd)pyrene	0.0796	ND	0.0678	0.0609	85.2	76.5	1	10.0-137			10.7	32
1-Methylnaphthalene	0.0796	ND	0.0613	0.0547	77.0	68.7	1	10.0-142			11.4	28
2-Methylnaphthalene	0.0796	ND	0.0634	0.0545	79.6	68.5	1	10.0-137			15.1	28
Naphthalene	0.0796	ND	0.0635	0.0559	79.8	70.2	1	10.0-135			12.7	27
Pyrene	0.0796	ND	0.0646	0.0568	81.2	71.4	1	10.0-148			12.9	35
(S) p-Terphenyl-d14					78.0	68.9		23.0-120				
(S) Nitrobenzene-d5					83.5	76.5		14.0-149				
(S) 2-Fluorobiphenyl					80.6	73.0		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.

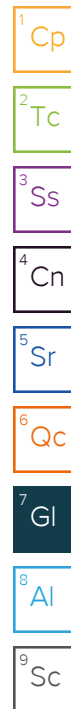
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	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: L1526213
Samples Received: 08/17/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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SAMPLE SUMMARY

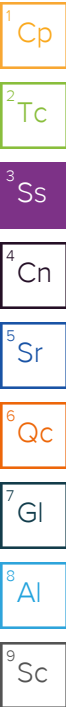
20220812-T73-11G-(S.PIT-E)@5-7' L1526213-01 Solid

Collected by
Kelly Malone

Collected date/time
08/12/22 10:20

Received date/time
08/17/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912658	1	08/25/22 09:59	08/25/22 09:59	ABL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1917373	1	08/30/22 23:09	09/06/22 14:17	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1915589	1	08/24/22 11:00	08/24/22 13:39	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1921552	1	09/06/22 10:47	09/08/22 09:17	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1914244	1	08/22/22 15:46	08/23/22 18:54	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1912892	1	08/18/22 15:13	08/24/22 12:12	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912874	5	08/18/22 19:18	08/20/22 12:06	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1913307	1	08/17/22 18:48	08/19/22 10:21	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1914122	1	08/17/22 18:48	08/21/22 14:55	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1912600	1	08/18/22 09:12	08/18/22 15:24	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1912342	1	08/18/22 09:56	08/18/22 17:44	AMG	Mt. Juliet, TN



20220812-T73-11G-(S.PIT-E)@10-12' L1526213-02 Solid

Collected by
Kelly Malone

Collected date/time
08/12/22 10:40

Received date/time
08/17/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912658	1	08/25/22 10:02	08/25/22 10:02	ABL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1917373	1	08/30/22 23:09	09/06/22 14:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1913510	1	08/19/22 12:01	08/19/22 18:00	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1921552	1	09/06/22 10:47	09/08/22 09:17	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1914244	1	08/22/22 15:46	08/23/22 18:57	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1912892	1	08/18/22 15:13	08/24/22 12:20	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912874	5	08/18/22 19:18	08/20/22 12:09	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1913307	1	08/17/22 18:48	08/19/22 10:42	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1914122	1	08/17/22 18:48	08/21/22 15:15	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1912600	1	08/18/22 09:12	08/18/22 15:37	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1912342	1	08/18/22 09:56	08/18/22 18:03	AMG	Mt. Juliet, TN

20220812-T73-11G-(S.PIT-E)@15-17' L1526213-03 Solid

Collected by
Kelly Malone

Collected date/time
08/12/22 11:05

Received date/time
08/17/22 08:45

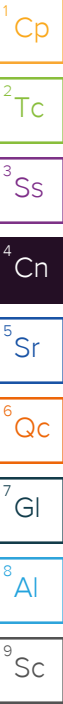
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912658	1	08/25/22 10:05	08/25/22 10:05	ABL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1917373	1	08/30/22 23:09	09/06/22 14:37	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1913510	1	08/19/22 12:01	08/19/22 18:00	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1921552	1	09/06/22 10:47	09/08/22 09:17	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1914244	1	08/22/22 15:46	08/23/22 19:00	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1912892	1	08/18/22 15:13	08/24/22 12:23	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912874	5	08/18/22 19:18	08/20/22 12:12	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1913307	1	08/17/22 18:48	08/19/22 11:04	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1914182	1	08/17/22 18:48	08/21/22 13:49	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1912600	1	08/18/22 09:12	08/18/22 15:50	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1912342	1	08/18/22 09:56	08/18/22 18:23	AMG	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	2.77		1	08/25/2022 09:59	WG1912658

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/06/2022 14:17	WG1917373

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.61	T8	1	08/24/2022 13:39	WG1915589

Sample Narrative:

L1526213-01 WG1915589: 9.61 at 22.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	472		10.0	1	09/08/2022 09:17	WG1921552

Sample Narrative:

L1526213-01 WG1921552: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	131		0.500	1	08/23/2022 18:54	WG1914244
Cadmium	ND		0.500	1	08/23/2022 18:54	WG1914244
Copper	9.40		2.00	1	08/23/2022 18:54	WG1914244
Lead	14.2		0.500	1	08/23/2022 18:54	WG1914244
Nickel	16.1		2.00	1	08/23/2022 18:54	WG1914244
Selenium	ND		2.00	1	08/23/2022 18:54	WG1914244
Silver	ND		1.00	1	08/23/2022 18:54	WG1914244
Zinc	39.5		5.00	1	08/23/2022 18:54	WG1914244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/24/2022 12:12	WG1912892

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.97		1.00	5	08/20/2022 12:06	WG1912874

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/19/2022 10:21	WG1913307
(S) a,a,a-Trifluorotoluene(FID)	112		77.0-120		08/19/2022 10:21	WG1913307



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/21/2022 14:55	WG1914122
Toluene	ND		0.00500	1	08/21/2022 14:55	WG1914122
Ethylbenzene	ND		0.00250	1	08/21/2022 14:55	WG1914122
Xylenes, Total	ND		0.00650	1	08/21/2022 14:55	WG1914122
1,2,4-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:55	WG1914122
1,3,5-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:55	WG1914122
(S) Toluene-d8	105		75.0-131		08/21/2022 14:55	WG1914122
(S) 4-Bromofluorobenzene	98.0		67.0-138		08/21/2022 14:55	WG1914122
(S) 1,2-Dichloroethane-d4	97.6		70.0-130		08/21/2022 14:55	WG1914122

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/18/2022 15:24	WG1912600
C28-C36 Motor Oil Range	ND		4.00	1	08/18/2022 15:24	WG1912600
(S) o-Terphenyl	55.0		18.0-148		08/18/2022 15:24	WG1912600

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Anthracene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Benzo(a)anthracene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Benzo(a)pyrene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Chrysene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Fluoranthene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Fluorene	ND		0.00600	1	08/18/2022 17:44	WG1912342
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2022 17:44	WG1912342
1-Methylnaphthalene	ND		0.0200	1	08/18/2022 17:44	WG1912342
2-Methylnaphthalene	ND		0.0200	1	08/18/2022 17:44	WG1912342
Naphthalene	ND		0.0200	1	08/18/2022 17:44	WG1912342
Pyrene	ND		0.00600	1	08/18/2022 17:44	WG1912342
(S) p-Terphenyl-d14	66.0		23.0-120		08/18/2022 17:44	WG1912342
(S) Nitrobenzene-d5	77.8		14.0-149		08/18/2022 17:44	WG1912342
(S) 2-Fluorobiphenyl	65.4		34.0-125		08/18/2022 17:44	WG1912342

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	4.28		1	08/25/2022 10:02	WG1912658

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/06/2022 14:32	WG1917373

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.37	T8	1	08/19/2022 18:00	WG1913510

Sample Narrative:

L1526213-02 WG1913510: 9.37 at 24.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	390		10.0	1	09/08/2022 09:17	WG1921552

Sample Narrative:

L1526213-02 WG1921552: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	128		0.500	1	08/23/2022 18:57	WG1914244
Cadmium	ND		0.500	1	08/23/2022 18:57	WG1914244
Copper	11.2		2.00	1	08/23/2022 18:57	WG1914244
Lead	14.5		0.500	1	08/23/2022 18:57	WG1914244
Nickel	14.3		2.00	1	08/23/2022 18:57	WG1914244
Selenium	ND		2.00	1	08/23/2022 18:57	WG1914244
Silver	ND		1.00	1	08/23/2022 18:57	WG1914244
Zinc	41.3		5.00	1	08/23/2022 18:57	WG1914244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/24/2022 12:20	WG1912892

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.39		1.00	5	08/20/2022 12:09	WG1912874

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/19/2022 10:42	WG1913307
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/19/2022 10:42	WG1913307

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/21/2022 15:15	WG1914122
Toluene	ND		0.00500	1	08/21/2022 15:15	WG1914122
Ethylbenzene	ND		0.00250	1	08/21/2022 15:15	WG1914122
Xylenes, Total	ND		0.00650	1	08/21/2022 15:15	WG1914122
1,2,4-Trimethylbenzene	ND		0.00500	1	08/21/2022 15:15	WG1914122
1,3,5-Trimethylbenzene	ND		0.00500	1	08/21/2022 15:15	WG1914122
(S) Toluene-d8	105		75.0-131		08/21/2022 15:15	WG1914122
(S) 4-Bromofluorobenzene	99.1		67.0-138		08/21/2022 15:15	WG1914122
(S) 1,2-Dichloroethane-d4	100		70.0-130		08/21/2022 15:15	WG1914122

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.22		4.00	1	08/18/2022 15:37	WG1912600
C28-C36 Motor Oil Range	ND		4.00	1	08/18/2022 15:37	WG1912600
(S) o-Terphenyl	48.2		18.0-148		08/18/2022 15:37	WG1912600

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Anthracene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Benzo(a)anthracene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Benzo(a)pyrene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Chrysene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Fluoranthene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Fluorene	ND		0.00600	1	08/18/2022 18:03	WG1912342
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2022 18:03	WG1912342
1-Methylnaphthalene	ND		0.0200	1	08/18/2022 18:03	WG1912342
2-Methylnaphthalene	ND		0.0200	1	08/18/2022 18:03	WG1912342
Naphthalene	ND		0.0200	1	08/18/2022 18:03	WG1912342
Pyrene	ND		0.00600	1	08/18/2022 18:03	WG1912342
(S) p-Terphenyl-d14	62.1		23.0-120		08/18/2022 18:03	WG1912342
(S) Nitrobenzene-d5	80.4		14.0-149		08/18/2022 18:03	WG1912342
(S) 2-Fluorobiphenyl	63.6		34.0-125		08/18/2022 18:03	WG1912342

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	15.0		1	08/25/2022 10:05	WG1912658

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/06/2022 14:37	WG1917373

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.16	T8	1	08/19/2022 18:00	WG1913510

Sample Narrative:
L1526213-03 WG1913510: 9.16 at 23.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	519		10.0	1	09/08/2022 09:17	WG1921552

Sample Narrative:
L1526213-03 WG1921552: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	127		0.500	1	08/23/2022 19:00	WG1914244
Cadmium	ND		0.500	1	08/23/2022 19:00	WG1914244
Copper	10.7		2.00	1	08/23/2022 19:00	WG1914244
Lead	14.8		0.500	1	08/23/2022 19:00	WG1914244
Nickel	14.8		2.00	1	08/23/2022 19:00	WG1914244
Selenium	ND		2.00	1	08/23/2022 19:00	WG1914244
Silver	ND		1.00	1	08/23/2022 19:00	WG1914244
Zinc	40.7		5.00	1	08/23/2022 19:00	WG1914244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/24/2022 12:23	WG1912892

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.11		1.00	5	08/20/2022 12:12	WG1912874

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/19/2022 11:04	WG1913307
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/19/2022 11:04	WG1913307

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/21/2022 13:49	WG1914182
Toluene	ND		0.00500	1	08/21/2022 13:49	WG1914182
Ethylbenzene	ND		0.00250	1	08/21/2022 13:49	WG1914182
Xylenes, Total	ND		0.00650	1	08/21/2022 13:49	WG1914182
1,2,4-Trimethylbenzene	ND		0.00500	1	08/21/2022 13:49	WG1914182
1,3,5-Trimethylbenzene	ND		0.00500	1	08/21/2022 13:49	WG1914182
(S) Toluene-d8	107		75.0-131		08/21/2022 13:49	WG1914182
(S) 4-Bromofluorobenzene	99.1		67.0-138		08/21/2022 13:49	WG1914182
(S) 1,2-Dichloroethane-d4	103		70.0-130		08/21/2022 13:49	WG1914182

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/18/2022 15:50	WG1912600
C28-C36 Motor Oil Range	ND		4.00	1	08/18/2022 15:50	WG1912600
(S) o-Terphenyl	48.1		18.0-148		08/18/2022 15:50	WG1912600

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Anthracene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Benzo(a)anthracene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Benzo(a)pyrene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Chrysene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Fluoranthene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Fluorene	ND		0.00600	1	08/18/2022 18:23	WG1912342
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2022 18:23	WG1912342
1-Methylnaphthalene	ND		0.0200	1	08/18/2022 18:23	WG1912342
2-Methylnaphthalene	ND		0.0200	1	08/18/2022 18:23	WG1912342
Naphthalene	ND		0.0200	1	08/18/2022 18:23	WG1912342
Pyrene	ND		0.00600	1	08/18/2022 18:23	WG1912342
(S) p-Terphenyl-d14	63.1		23.0-120		08/18/2022 18:23	WG1912342
(S) Nitrobenzene-d5	79.8		14.0-149		08/18/2022 18:23	WG1912342
(S) 2-Fluorobiphenyl	62.0		34.0-125		08/18/2022 18:23	WG1912342

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3834614-1 09/06/22 11:48

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

L1526202-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1526202-01 09/06/22 13:35 • (DUP) R3834614-7 09/06/22 13:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	18.9		20

L1526207-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1526207-03 09/06/22 14:06 • (DUP) R3834614-8 09/06/22 14:11

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

Laboratory Control Sample (LCS)

(LCS) R3834614-2 09/06/22 11:54

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

L1526195-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526195-01 09/06/22 12:36 • (MS) R3834614-3 09/06/22 12:43 • (MSD) R3834614-4 09/06/22 12:48

	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	ND	18.3	17.3	89.1	84.3	1	75.0-125			5.35	20

L1526195-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1526195-01 09/07/22 12:19 • (MS) R3834634-1 09/07/22 12:24

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	633	ND	993	157	50	75.0-125	J5

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

L1526126-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1526126-11 08/19/22 18:00 • (DUP) R3828367-2 08/19/22 18:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.35	7.35	1	0.000		1

Sample Narrative:

OS: 7.35 at 24C

DUP: 7.35 at 24.5C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1526128-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1526128-16 08/19/22 18:00 • (DUP) R3828367-3 08/19/22 18:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.59	7.57	1	0.264		1

Sample Narrative:

OS: 7.59 at 24.4C

DUP: 7.57 at 24C

Laboratory Control Sample (LCS)

(LCS) R3828367-1 08/19/22 18:00

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

Sample Narrative:

LCS: 9.99 at 23C

L1525829-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1525829-03 08/24/22 13:39 • (DUP) R3829893-2 08/24/22 13:39

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.40	8.37	1	0.358		1

Sample Narrative:

OS: 8.4 at 22.3C

DUP: 8.37 at 22.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1527200-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1527200-01 08/24/22 13:39 • (DUP) R3829893-3 08/24/22 13:39

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.78	8.77	1	0.114		1

Sample Narrative:

OS: 8.78 at 21.8C

DUP: 8.77 at 21.8C

Laboratory Control Sample (LCS)

(LCS) R3829893-1 08/24/22 13:39

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

Sample Narrative:

LCS: 9.91 at 21.3C

Method Blank (MB)

(MB) R3834899-1 09/08/22 09:17

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

L1526213-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1526213-02 09/08/22 09:17 • (DUP) R3834899-3 09/08/22 09:17

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	390	386	1	1.03		20

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

L1526729-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1526729-02 09/08/22 09:17 • (DUP) R3834899-4 09/08/22 09:17

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1350	1380	1	2.57		20

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

Laboratory Control Sample (LCS)

(LCS) R3834899-2 09/08/22 09:17

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1120	99.7	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829619-1 08/23/22 18:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	1.02	J	0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3829619-2 08/23/22 18:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.1	97.1	80.0-120	
Cadmium	100	95.0	95.0	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	93.2	93.2	80.0-120	
Nickel	100	94.5	94.5	80.0-120	
Selenium	100	98.6	98.6	80.0-120	
Silver	20.0	18.0	89.8	80.0-120	
Zinc	100	92.0	92.0	80.0-120	

L1526202-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526202-01 08/23/22 18:06 • (MS) R3829619-5 08/23/22 18:14 • (MSD) R3829619-6 08/23/22 18:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	215	289	285	74.3	70.0	1	75.0-125	J6	J6	1.48	20
Cadmium	100	ND	92.0	93.6	91.8	93.5	1	75.0-125			1.81	20
Copper	100	6.72	107	109	101	102	1	75.0-125			1.75	20
Lead	100	22.6	120	120	97.1	97.4	1	75.0-125			0.247	20
Nickel	100	5.49	103	104	97.7	98.8	1	75.0-125			1.05	20
Selenium	100	ND	92.2	95.5	92.2	95.5	1	75.0-125	E	E	3.52	20
Silver	20.0	ND	17.1	17.5	85.4	87.3	1	75.0-125			2.21	20
Zinc	100	37.8	124	126	86.2	87.9	1	75.0-125			1.42	20

Method Blank (MB)

(MB) R3829927-1 08/24/22 11:48

Analyte	MB Result mg/l	<u>MB Qualifier</u>	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) R3829927-2 08/24/22 11:51 • (LCSD) R3829927-3 08/24/22 11:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.978	1.00	97.8	100	80.0-120			2.22	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3828470-1 08/20/22 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3828470-2 08/20/22 11:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	80.6	80.6	80.0-120	

L1526221-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526221-02 08/20/22 11:13 • (MS) R3828470-5 08/20/22 11:23 • (MSD) R3828470-6 08/20/22 11:26

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	2.72	81.6	85.3	78.9	82.6	5	75.0-125			4.36	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3828655-4 08/19/22 08:33

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)	112			77.0-120

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

(LCS) R3828655-1 08/19/22 06:00 • (LCSD) R3828655-3 08/19/22 07:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	4.80	4.41	87.3	80.2	72.0-127			8.47	20
(S) a,a,a-Trifluorotoluene(FID)				102	102	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829101-3 08/21/22 07:10

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	96.4			67.0-138
(S) 1,2-Dichloroethane-d4	95.1			70.0-130

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

(LCS) R3829101-1 08/21/22 05:51 • (LCSD) R3829101-2 08/21/22 06:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.134	0.129	107	103	70.0-123			3.80	20
Toluene	0.125	0.127	0.123	102	98.4	75.0-121			3.20	20
Ethylbenzene	0.125	0.132	0.133	106	106	74.0-126			0.755	20
Xylenes, Total	0.375	0.396	0.394	106	105	72.0-127			0.506	20
1,2,4-Trimethylbenzene	0.125	0.129	0.128	103	102	70.0-126			0.778	20
1,3,5-Trimethylbenzene	0.125	0.126	0.123	101	98.4	73.0-127			2.41	20
(S) Toluene-d8				102	103	75.0-131				
(S) 4-Bromofluorobenzene				99.3	101	67.0-138				
(S) 1,2-Dichloroethane-d4				113	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829265-3 08/21/22 12:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	97.6			67.0-138
(S) 1,2-Dichloroethane-d4	101			70.0-130

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

(LCS) R3829265-1 08/21/22 11:21 • (LCSD) R3829265-2 08/21/22 11:40

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	0.131	0.134	105	107	70.0-123			2.26	20
Toluene	0.125	0.128	0.132	102	106	75.0-121			3.08	20
Ethylbenzene	0.125	0.121	0.124	96.8	99.2	74.0-126			2.45	20
Xylenes, Total	0.375	0.360	0.371	96.0	98.9	72.0-127			3.01	20
1,2,4-Trimethylbenzene	0.125	0.123	0.127	98.4	102	70.0-126			3.20	20
1,3,5-Trimethylbenzene	0.125	0.125	0.130	100	104	73.0-127			3.92	20
(S) Toluene-d8				102	103	75.0-131				
(S) 4-Bromofluorobenzene				98.8	99.7	67.0-138				
(S) 1,2-Dichloroethane-d4				108	109	70.0-130				

L1526221-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526221-01 08/21/22 14:08 • (MS) R3829265-4 08/21/22 20:10 • (MSD) R3829265-5 08/21/22 20:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	ND	0.0894	0.0854	71.5	68.3	1	10.0-149			4.58	37
Toluene	0.125	ND	0.276	0.355	221	284	1	10.0-156	J5	J5	25.0	38
Ethylbenzene	0.125	ND	0.106	0.121	84.8	96.8	1	10.0-160			13.2	38
Xylenes, Total	0.375	ND	0.348	0.430	92.8	115	1	10.0-160			21.1	38
1,2,4-Trimethylbenzene	0.125	ND	0.0888	0.0839	71.0	67.1	1	10.0-160			5.67	36
1,3,5-Trimethylbenzene	0.125	ND	0.0866	0.0818	69.3	65.4	1	10.0-160			5.70	38
(S) Toluene-d8					105	104		75.0-131				
(S) 4-Bromofluorobenzene					99.7	96.4		67.0-138				
(S) 1,2-Dichloroethane-d4					99.4	97.7		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3828035-1 08/18/22 13:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.315	⬇	0.274	4.00
(S) o-Terphenyl	55.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3828035-2 08/18/22 13:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	34.3	68.6	50.0-150	
(S) o-Terphenyl			79.0	18.0-148	

L1526190-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526190-01 08/18/22 16:29 • (MS) R3828035-3 08/18/22 16:42 • (MSD) R3828035-4 08/18/22 16:55

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	48.3	5.91	38.2	33.1	66.9	55.5	1	50.0-150			14.3	20
(S) o-Terphenyl					63.8	53.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829095-2 08/18/22 15:45

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	71.3			23.0-120
(S) Nitrobenzene-d5	79.3			14.0-149
(S) 2-Fluorobiphenyl	71.8			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3829095-1 08/18/22 15:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0643	80.4	50.0-120	
Anthracene	0.0800	0.0661	82.6	50.0-126	
Benzo(a)anthracene	0.0800	0.0656	82.0	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0627	78.4	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0615	76.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0648	81.0	42.0-120	
Chrysene	0.0800	0.0665	83.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0599	74.9	47.0-125	
Fluoranthene	0.0800	0.0689	86.1	49.0-129	
Fluorene	0.0800	0.0647	80.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0639	79.9	46.0-125	
1-Methylnaphthalene	0.0800	0.0591	73.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0629	78.6	50.0-120	
Naphthalene	0.0800	0.0596	74.5	50.0-120	
Pyrene	0.0800	0.0620	77.5	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3829095-1 08/18/22 15:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			86.9	23.0-120	
(S) Nitrobenzene-d5			125	14.0-149	
(S) 2-Fluorobiphenyl			89.2	34.0-125	

L1526242-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526242-01 08/18/22 20:22 • (MS) R3829095-3 08/18/22 20:42 • (MSD) R3829095-4 08/18/22 21:02

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	0.0800	0.0222	0.0504	0.0636	35.3	51.8	1	14.0-127			23.2	27
Anthracene	0.0800	0.0116	0.0377	0.0482	32.6	45.8	1	10.0-145			24.4	30
Benzo(a)anthracene	0.0800	0.0328	0.0515	0.0527	23.4	24.9	1	10.0-139			2.30	30
Benzo(b)fluoranthene	0.0800	0.0344	0.0531	0.0497	23.4	19.1	1	10.0-140			6.61	36
Benzo(k)fluoranthene	0.0800	0.0115	0.0482	0.0499	45.9	48.0	1	10.0-137			3.47	31
Benzo(a)pyrene	0.0800	0.0299	0.0566	0.0548	33.4	31.1	1	10.0-141			3.23	31
Chrysene	0.0800	0.0326	0.0557	0.0563	28.9	29.6	1	10.0-145			1.07	30
Dibenz(a,h)anthracene	0.0800	ND	0.0421	0.0458	47.5	52.1	1	10.0-132			8.42	31
Fluoranthene	0.0800	0.0672	0.0598	0.0606	0.000	0.000	1	10.0-153	J6	J6	1.33	33
Fluorene	0.0800	0.0231	0.0452	0.0606	27.6	46.9	1	11.0-130		J3	29.1	29
Indeno(1,2,3-cd)pyrene	0.0800	0.0193	0.0519	0.0504	40.8	38.9	1	10.0-137			2.93	32
1-Methylnaphthalene	0.0800	0.0710	0.0836	0.0650	15.7	0.000	1	10.0-142		J6	25.0	28
2-Methylnaphthalene	0.0800	0.110	0.105	0.0726	0.000	0.000	1	10.0-137	J6	J3 J6	36.5	28
Naphthalene	0.0800	ND	0.0365	0.0695	28.5	69.8	1	10.0-135		J3	62.3	27
Pyrene	0.0800	0.0584	0.0581	0.0569	0.000	0.000	1	10.0-148	J6	J6	2.09	35
(S) p-Terphenyl-d14					52.4	56.1		23.0-120				
(S) Nitrobenzene-d5					69.8	73.4		14.0-149				
(S) 2-Fluorobiphenyl					43.8	57.1		34.0-125				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

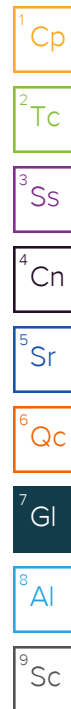
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
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.
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.



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
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61524213

<u>Tracking Numbers</u>	<u>Temperature</u>
5755 8084 7654	RRAD .2
76413	RRAD 1.9

Caerus Oil and Gas

Sample Delivery Group: L1526221
Samples Received: 08/17/2022
Project Number: T73-11G
Description: PCU T73-11G
Site: T73-11G
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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



Pace Analytical 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

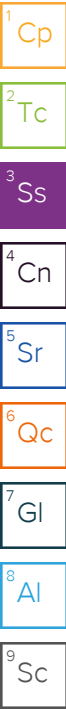
20220812-T73-11G-(S.PIT-N)@5-7' L1526221-01 Solid

Collected by
Kelly Malone

Collected date/time
08/12/22 08:30

Received date/time
08/17/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912658	1	08/25/22 10:08	08/25/22 10:08	ABL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1917373	1	08/30/22 23:09	09/06/22 14:42	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1915589	1	08/24/22 11:00	08/24/22 13:39	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1921552	1	09/06/22 10:47	09/08/22 09:17	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1914244	1	08/22/22 15:46	08/23/22 19:09	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1912892	1	08/18/22 15:13	08/24/22 12:26	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912874	5	08/18/22 19:18	08/20/22 12:16	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1913307	1	08/17/22 18:48	08/19/22 11:26	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1914182	1	08/17/22 18:48	08/21/22 14:08	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1912600	1	08/18/22 09:12	08/18/22 14:44	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1912342	1	08/18/22 09:56	08/18/22 18:43	AMG	Mt. Juliet, TN



20220812-T73-11G-(S.PIT-N)@10-12' L1526221-02 Solid

Collected by
Kelly Malone

Collected date/time
08/12/22 08:50

Received date/time
08/17/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912658	1	08/25/22 10:16	08/25/22 10:16	ABL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1917373	1	08/30/22 23:09	09/06/22 14:48	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1915589	1	08/24/22 11:00	08/24/22 13:39	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1921552	1	09/06/22 10:47	09/08/22 09:17	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1914244	1	08/22/22 15:46	08/23/22 19:11	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1912892	1	08/18/22 15:13	08/24/22 12:28	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912874	5	08/18/22 19:18	08/20/22 11:13	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1913307	1	08/17/22 18:48	08/19/22 11:47	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1914182	1	08/17/22 18:48	08/21/22 14:28	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1912600	1	08/18/22 09:12	08/18/22 16:03	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1912342	1	08/18/22 09:56	08/18/22 19:03	AMG	Mt. Juliet, TN

20220812-T73-11G-(S.PIT-N)@15-17' L1526221-03 Solid

Collected by
Kelly Malone

Collected date/time
08/12/22 09:05

Received date/time
08/17/22 08:45

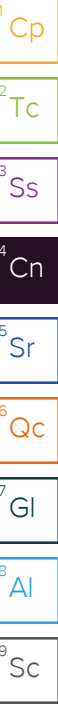
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1912658	1	08/25/22 10:19	08/25/22 10:19	ABL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1917373	1	08/30/22 23:09	09/06/22 14:53	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1915589	1	08/24/22 11:00	08/24/22 13:39	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1921552	1	09/06/22 10:47	09/08/22 09:17	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1914244	1	08/22/22 15:46	08/23/22 19:15	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1912892	1	08/18/22 15:13	08/24/22 12:31	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1912874	5	08/18/22 19:18	08/20/22 12:25	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1913307	1	08/17/22 18:48	08/19/22 12:09	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1914182	1	08/17/22 18:48	08/21/22 14:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1912600	1	08/18/22 09:12	08/18/22 16:16	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1912342	1	08/18/22 09:56	08/18/22 19:23	AMG	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	2.40		1	08/25/2022 10:08	WG1912658

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/06/2022 14:42	WG1917373

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.53	T8	1	08/24/2022 13:39	WG1915589

Sample Narrative:

L1526221-01 WG1915589: 9.53 at 22.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	438		10.0	1	09/08/2022 09:17	WG1921552

Sample Narrative:

L1526221-01 WG1921552: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	434		0.500	1	08/23/2022 19:09	WG1914244
Cadmium	ND		0.500	1	08/23/2022 19:09	WG1914244
Copper	10.9		2.00	1	08/23/2022 19:09	WG1914244
Lead	15.3		0.500	1	08/23/2022 19:09	WG1914244
Nickel	15.1		2.00	1	08/23/2022 19:09	WG1914244
Selenium	ND		2.00	1	08/23/2022 19:09	WG1914244
Silver	ND		1.00	1	08/23/2022 19:09	WG1914244
Zinc	45.1		5.00	1	08/23/2022 19:09	WG1914244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/24/2022 12:26	WG1912892

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.84		1.00	5	08/20/2022 12:16	WG1912874

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/19/2022 11:26	WG1913307
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/19/2022 11:26	WG1913307

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/21/2022 14:08	WG1914182
Toluene	ND	<u>J5</u>	0.00500	1	08/21/2022 14:08	WG1914182
Ethylbenzene	ND		0.00250	1	08/21/2022 14:08	WG1914182
Xylenes, Total	ND		0.00650	1	08/21/2022 14:08	WG1914182
1,2,4-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:08	WG1914182
1,3,5-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:08	WG1914182
(S) Toluene-d8	104		75.0-131		08/21/2022 14:08	WG1914182
(S) 4-Bromofluorobenzene	97.9		67.0-138		08/21/2022 14:08	WG1914182
(S) 1,2-Dichloroethane-d4	102		70.0-130		08/21/2022 14:08	WG1914182

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/18/2022 14:44	WG1912600
C28-C36 Motor Oil Range	ND		4.00	1	08/18/2022 14:44	WG1912600
(S) o-Terphenyl	56.5		18.0-148		08/18/2022 14:44	WG1912600

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Anthracene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Benzo(a)anthracene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Benzo(a)pyrene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Chrysene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Fluoranthene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Fluorene	ND		0.00600	1	08/18/2022 18:43	WG1912342
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2022 18:43	WG1912342
1-Methylnaphthalene	ND		0.0200	1	08/18/2022 18:43	WG1912342
2-Methylnaphthalene	ND		0.0200	1	08/18/2022 18:43	WG1912342
Naphthalene	ND		0.0200	1	08/18/2022 18:43	WG1912342
Pyrene	ND		0.00600	1	08/18/2022 18:43	WG1912342
(S) p-Terphenyl-d14	74.5		23.0-120		08/18/2022 18:43	WG1912342
(S) Nitrobenzene-d5	80.8		14.0-149		08/18/2022 18:43	WG1912342
(S) 2-Fluorobiphenyl	76.3		34.0-125		08/18/2022 18:43	WG1912342

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	15.4		1	08/25/2022 10:16	WG1912658

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/06/2022 14:48	WG1917373

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.50	T8	1	08/24/2022 13:39	WG1915589

Sample Narrative:

L1526221-02 WG1915589: 9.5 at 21.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	541		10.0	1	09/08/2022 09:17	WG1921552

Sample Narrative:

L1526221-02 WG1921552: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	389		0.500	1	08/23/2022 19:11	WG1914244
Cadmium	ND		0.500	1	08/23/2022 19:11	WG1914244
Copper	16.6		2.00	1	08/23/2022 19:11	WG1914244
Lead	17.1		0.500	1	08/23/2022 19:11	WG1914244
Nickel	14.8		2.00	1	08/23/2022 19:11	WG1914244
Selenium	ND		2.00	1	08/23/2022 19:11	WG1914244
Silver	ND		1.00	1	08/23/2022 19:11	WG1914244
Zinc	47.9		5.00	1	08/23/2022 19:11	WG1914244

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/24/2022 12:28	WG1912892

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.72		1.00	5	08/20/2022 11:13	WG1912874

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/19/2022 11:47	WG1913307
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/19/2022 11:47	WG1913307

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/21/2022 14:28	WG1914182
Toluene	ND		0.00500	1	08/21/2022 14:28	WG1914182
Ethylbenzene	ND		0.00250	1	08/21/2022 14:28	WG1914182
Xylenes, Total	ND		0.00650	1	08/21/2022 14:28	WG1914182
1,2,4-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:28	WG1914182
1,3,5-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:28	WG1914182
(S) Toluene-d8	107		75.0-131		08/21/2022 14:28	WG1914182
(S) 4-Bromofluorobenzene	98.2		67.0-138		08/21/2022 14:28	WG1914182
(S) 1,2-Dichloroethane-d4	102		70.0-130		08/21/2022 14:28	WG1914182

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.05		4.00	1	08/18/2022 16:03	WG1912600
C28-C36 Motor Oil Range	ND		4.00	1	08/18/2022 16:03	WG1912600
(S) o-Terphenyl	59.1		18.0-148		08/18/2022 16:03	WG1912600

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Anthracene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Benzo(a)anthracene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Benzo(a)pyrene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Chrysene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Fluoranthene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Fluorene	ND		0.00600	1	08/18/2022 19:03	WG1912342
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2022 19:03	WG1912342
1-Methylnaphthalene	ND		0.0200	1	08/18/2022 19:03	WG1912342
2-Methylnaphthalene	ND		0.0200	1	08/18/2022 19:03	WG1912342
Naphthalene	ND		0.0200	1	08/18/2022 19:03	WG1912342
Pyrene	ND		0.00600	1	08/18/2022 19:03	WG1912342
(S) p-Terphenyl-d14	66.7		23.0-120		08/18/2022 19:03	WG1912342
(S) Nitrobenzene-d5	78.0		14.0-149		08/18/2022 19:03	WG1912342
(S) 2-Fluorobiphenyl	65.6		34.0-125		08/18/2022 19:03	WG1912342

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	14.2		1	08/25/2022 10:19	WG1912658

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/06/2022 14:53	WG1917373

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.41	T8	1	08/24/2022 13:39	WG1915589

Sample Narrative:

L1526221-03 WG1915589: 9.41 at 21.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	500		10.0	1	09/08/2022 09:17	WG1921552

Sample Narrative:

L1526221-03 WG1921552: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	266		0.500	1	08/23/2022 19:15	WG1914244
Cadmium	ND		0.500	1	08/23/2022 19:15	WG1914244
Copper	17.0		2.00	1	08/23/2022 19:15	WG1914244
Lead	17.2		0.500	1	08/23/2022 19:15	WG1914244
Nickel	15.5		2.00	1	08/23/2022 19:15	WG1914244
Selenium	ND		2.00	1	08/23/2022 19:15	WG1914244
Silver	ND		1.00	1	08/23/2022 19:15	WG1914244
Zinc	51.8		5.00	1	08/23/2022 19:15	WG1914244

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

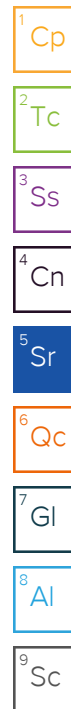
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/24/2022 12:31	WG1912892

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.80		1.00	5	08/20/2022 12:25	WG1912874

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/19/2022 12:09	WG1913307
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/19/2022 12:09	WG1913307



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	08/21/2022 14:47	WG1914182
Toluene	ND		0.00500	1	08/21/2022 14:47	WG1914182
Ethylbenzene	ND		0.00250	1	08/21/2022 14:47	WG1914182
Xylenes, Total	ND		0.00650	1	08/21/2022 14:47	WG1914182
1,2,4-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:47	WG1914182
1,3,5-Trimethylbenzene	ND		0.00500	1	08/21/2022 14:47	WG1914182
(S) Toluene-d8	105		75.0-131		08/21/2022 14:47	WG1914182
(S) 4-Bromofluorobenzene	99.4		67.0-138		08/21/2022 14:47	WG1914182
(S) 1,2-Dichloroethane-d4	100		70.0-130		08/21/2022 14:47	WG1914182

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/18/2022 16:16	WG1912600
C28-C36 Motor Oil Range	ND		4.00	1	08/18/2022 16:16	WG1912600
(S) o-Terphenyl	50.0		18.0-148		08/18/2022 16:16	WG1912600

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Anthracene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Benzo(a)anthracene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Benzo(a)pyrene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Chrysene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Fluoranthene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Fluorene	ND		0.00600	1	08/18/2022 19:23	WG1912342
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2022 19:23	WG1912342
1-Methylnaphthalene	ND		0.0200	1	08/18/2022 19:23	WG1912342
2-Methylnaphthalene	ND		0.0200	1	08/18/2022 19:23	WG1912342
Naphthalene	ND		0.0200	1	08/18/2022 19:23	WG1912342
Pyrene	ND		0.00600	1	08/18/2022 19:23	WG1912342
(S) p-Terphenyl-d14	68.0		23.0-120		08/18/2022 19:23	WG1912342
(S) Nitrobenzene-d5	72.9		14.0-149		08/18/2022 19:23	WG1912342
(S) 2-Fluorobiphenyl	68.7		34.0-125		08/18/2022 19:23	WG1912342

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3834614-1 09/06/22 11:48

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

L1526202-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1526202-01 09/06/22 13:35 • (DUP) R3834614-7 09/06/22 13:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	18.9		20

L1526207-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1526207-03 09/06/22 14:06 • (DUP) R3834614-8 09/06/22 14:11

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

Laboratory Control Sample (LCS)

(LCS) R3834614-2 09/06/22 11:54

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

L1526195-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526195-01 09/06/22 12:36 • (MS) R3834614-3 09/06/22 12:43 • (MSD) R3834614-4 09/06/22 12:48

	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	ND	18.3	17.3	89.1	84.3	1	75.0-125			5.35	20

L1526195-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1526195-01 09/07/22 12:19 • (MS) R3834634-1 09/07/22 12:24

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	633	ND	993	157	50	75.0-125	J5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1525829-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1525829-03 08/24/22 13:39 • (DUP) R3829893-2 08/24/22 13:39

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.40	8.37	1	0.358		1

Sample Narrative:

OS: 8.4 at 22.3C

DUP: 8.37 at 22.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1527200-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1527200-01 08/24/22 13:39 • (DUP) R3829893-3 08/24/22 13:39

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.78	8.77	1	0.114		1

Sample Narrative:

OS: 8.78 at 21.8C

DUP: 8.77 at 21.8C

Laboratory Control Sample (LCS)

(LCS) R3829893-1 08/24/22 13:39

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

Sample Narrative:

LCS: 9.91 at 21.3C

Method Blank (MB)

(MB) R3834899-1 09/08/22 09:17

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

L1526213-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1526213-02 09/08/22 09:17 • (DUP) R3834899-3 09/08/22 09:17

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	390	386	1	1.03		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1526729-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1526729-02 09/08/22 09:17 • (DUP) R3834899-4 09/08/22 09:17

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1350	1380	1	2.57		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3834899-2 09/08/22 09:17

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1120	99.7	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829619-1 08/23/22 18:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	1.02	J	0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3829619-2 08/23/22 18:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.1	97.1	80.0-120	
Cadmium	100	95.0	95.0	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	93.2	93.2	80.0-120	
Nickel	100	94.5	94.5	80.0-120	
Selenium	100	98.6	98.6	80.0-120	
Silver	20.0	18.0	89.8	80.0-120	
Zinc	100	92.0	92.0	80.0-120	

L1526202-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526202-01 08/23/22 18:06 • (MS) R3829619-5 08/23/22 18:14 • (MSD) R3829619-6 08/23/22 18:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	215	289	285	74.3	70.0	1	75.0-125	J6	J6	1.48	20
Cadmium	100	ND	92.0	93.6	91.8	93.5	1	75.0-125			1.81	20
Copper	100	6.72	107	109	101	102	1	75.0-125			1.75	20
Lead	100	22.6	120	120	97.1	97.4	1	75.0-125			0.247	20
Nickel	100	5.49	103	104	97.7	98.8	1	75.0-125			1.05	20
Selenium	100	ND	92.2	95.5	92.2	95.5	1	75.0-125	E	E	3.52	20
Silver	20.0	ND	17.1	17.5	85.4	87.3	1	75.0-125			2.21	20
Zinc	100	37.8	124	126	86.2	87.9	1	75.0-125			1.42	20

Method Blank (MB)

(MB) R3829927-1 08/24/22 11:48

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) R3829927-2 08/24/22 11:51 • (LCSD) R3829927-3 08/24/22 11:53

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	0.978	1.00	97.8	100	80.0-120			2.22	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3828470-1 08/20/22 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3828470-2 08/20/22 11:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	80.6	80.6	80.0-120	

L1526221-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526221-02 08/20/22 11:13 • (MS) R3828470-5 08/20/22 11:23 • (MSD) R3828470-6 08/20/22 11:26

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	2.72	81.6	85.3	78.9	82.6	5	75.0-125			4.36	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3828655-4 08/19/22 08:33

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)	112			77.0-120

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

(LCS) R3828655-1 08/19/22 06:00 • (LCSD) R3828655-3 08/19/22 07:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	4.80	4.41	87.3	80.2	72.0-127			8.47	20
(S) a,a,a-Trifluorotoluene(FID)				102	102	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) R3829265-3 08/21/22 12:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	97.6			67.0-138
(S) 1,2-Dichloroethane-d4	101			70.0-130

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

(LCS) R3829265-1 08/21/22 11:21 • (LCSD) R3829265-2 08/21/22 11:40

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	0.131	0.134	105	107	70.0-123			2.26	20
Toluene	0.125	0.128	0.132	102	106	75.0-121			3.08	20
Ethylbenzene	0.125	0.121	0.124	96.8	99.2	74.0-126			2.45	20
Xylenes, Total	0.375	0.360	0.371	96.0	98.9	72.0-127			3.01	20
1,2,4-Trimethylbenzene	0.125	0.123	0.127	98.4	102	70.0-126			3.20	20
1,3,5-Trimethylbenzene	0.125	0.125	0.130	100	104	73.0-127			3.92	20
(S) Toluene-d8				102	103	75.0-131				
(S) 4-Bromofluorobenzene				98.8	99.7	67.0-138				
(S) 1,2-Dichloroethane-d4				108	109	70.0-130				

L1526221-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526221-01 08/21/22 14:08 • (MS) R3829265-4 08/21/22 20:10 • (MSD) R3829265-5 08/21/22 20:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	ND	0.0894	0.0854	71.5	68.3	1	10.0-149			4.58	37
Toluene	0.125	ND	0.276	0.355	221	284	1	10.0-156	J5	J5	25.0	38
Ethylbenzene	0.125	ND	0.106	0.121	84.8	96.8	1	10.0-160			13.2	38
Xylenes, Total	0.375	ND	0.348	0.430	92.8	115	1	10.0-160			21.1	38
1,2,4-Trimethylbenzene	0.125	ND	0.0888	0.0839	71.0	67.1	1	10.0-160			5.67	36
1,3,5-Trimethylbenzene	0.125	ND	0.0866	0.0818	69.3	65.4	1	10.0-160			5.70	38
(S) Toluene-d8					105	104		75.0-131				
(S) 4-Bromofluorobenzene					99.7	96.4		67.0-138				
(S) 1,2-Dichloroethane-d4					99.4	97.7		70.0-130				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

Method Blank (MB)

(MB) R3828035-1 08/18/22 13:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.315	⌵	0.274	4.00
(S) o-Terphenyl	55.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3828035-2 08/18/22 13:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	34.3	68.6	50.0-150	
(S) o-Terphenyl			79.0	18.0-148	

L1526190-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526190-01 08/18/22 16:29 • (MS) R3828035-3 08/18/22 16:42 • (MSD) R3828035-4 08/18/22 16:55

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	48.3	5.91	38.2	33.1	66.9	55.5	1	50.0-150			14.3	20
(S) o-Terphenyl					63.8	53.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3829095-2 08/18/22 15:45

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	71.3			23.0-120
(S) Nitrobenzene-d5	79.3			14.0-149
(S) 2-Fluorobiphenyl	71.8			34.0-125

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3829095-1 08/18/22 15:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0643	80.4	50.0-120	
Anthracene	0.0800	0.0661	82.6	50.0-126	
Benzo(a)anthracene	0.0800	0.0656	82.0	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0627	78.4	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0615	76.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0648	81.0	42.0-120	
Chrysene	0.0800	0.0665	83.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0599	74.9	47.0-125	
Fluoranthene	0.0800	0.0689	86.1	49.0-129	
Fluorene	0.0800	0.0647	80.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0639	79.9	46.0-125	
1-Methylnaphthalene	0.0800	0.0591	73.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0629	78.6	50.0-120	
Naphthalene	0.0800	0.0596	74.5	50.0-120	
Pyrene	0.0800	0.0620	77.5	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3829095-1 08/18/22 15:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			86.9	23.0-120	
(S) Nitrobenzene-d5			125	14.0-149	
(S) 2-Fluorobiphenyl			89.2	34.0-125	

L1526242-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1526242-01 08/18/22 20:22 • (MS) R3829095-3 08/18/22 20:42 • (MSD) R3829095-4 08/18/22 21:02

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0800	0.0222	0.0504	0.0636	35.3	51.8	1	14.0-127			23.2	27
Anthracene	0.0800	0.0116	0.0377	0.0482	32.6	45.8	1	10.0-145			24.4	30
Benzo(a)anthracene	0.0800	0.0328	0.0515	0.0527	23.4	24.9	1	10.0-139			2.30	30
Benzo(b)fluoranthene	0.0800	0.0344	0.0531	0.0497	23.4	19.1	1	10.0-140			6.61	36
Benzo(k)fluoranthene	0.0800	0.0115	0.0482	0.0499	45.9	48.0	1	10.0-137			3.47	31
Benzo(a)pyrene	0.0800	0.0299	0.0566	0.0548	33.4	31.1	1	10.0-141			3.23	31
Chrysene	0.0800	0.0326	0.0557	0.0563	28.9	29.6	1	10.0-145			1.07	30
Dibenz(a,h)anthracene	0.0800	ND	0.0421	0.0458	47.5	52.1	1	10.0-132			8.42	31
Fluoranthene	0.0800	0.0672	0.0598	0.0606	0.000	0.000	1	10.0-153	J6	J6	1.33	33
Fluorene	0.0800	0.0231	0.0452	0.0606	27.6	46.9	1	11.0-130		J3	29.1	29
Indeno(1,2,3-cd)pyrene	0.0800	0.0193	0.0519	0.0504	40.8	38.9	1	10.0-137			2.93	32
1-Methylnaphthalene	0.0800	0.0710	0.0836	0.0650	15.7	0.000	1	10.0-142		J6	25.0	28
2-Methylnaphthalene	0.0800	0.110	0.105	0.0726	0.000	0.000	1	10.0-137	J6	J3 J6	36.5	28
Naphthalene	0.0800	ND	0.0365	0.0695	28.5	69.8	1	10.0-135		J3	62.3	27
Pyrene	0.0800	0.0584	0.0581	0.0569	0.000	0.000	1	10.0-148	J6	J6	2.09	35
(S) p-Terphenyl-d14					52.4	56.1		23.0-120				
(S) Nitrobenzene-d5					69.8	73.4		14.0-149				
(S) 2-Fluorobiphenyl					43.8	57.1		34.0-125				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

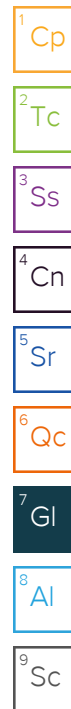
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
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.
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.



ACCREDITATIONS & LOCATIONS

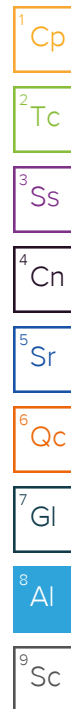
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



<u>Tracking Numbers</u>		<u>Temperature</u>
5755 8084 7654		RRAG .2
7643		RRAG 1.9

1526121



08/21/12

Technical Report for

XTO Energy

PCU 297-11A

1202-05

Accutest Job Number: D37609

Sampling Date: 08/14/12

Report to:

KRW Consulting, Inc.
8000 West 14th Avenue
Lakewood, CO 80214
cburger@krwconsulting.com; dknudson@krwconsulting.com;
jhess@krwconsulting.com; crachak@krwconsulting.com;
ATTN: Dwayne Knudson

Total number of pages in report: 23



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D37609

PCU 297-11A
Project No: 1202-05

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D37609-1	08/14/12	12:40 DS	08/16/12	SO	Soil	BACKGROUND 1
D37609-2	08/14/12	12:50 DS	08/16/12	SO	Soil	BACKGROUND 2
D37609-3	08/14/12	13:00 DS	08/16/12	SO	Soil	BACKGROUND 3
D37609-4	08/14/12	13:10 DS	08/16/12	SO	Soil	BACKGROUND 4
D37609-5	08/14/12	13:15 DS	08/16/12	SO	Soil	BACKGROUND 5
D37609-6	08/14/12	13:20 DS	08/16/12	SO	Soil	BACKGROUND 6
D37609-7	08/14/12	13:25 DS	08/16/12	SO	Soil	BACKGROUND 7
D37609-8	08/14/12	13:30 DS	08/16/12	SO	Soil	BACKGROUND 8

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Caerus Oil and Gas

Sample Delivery Group: L1520371
Samples Received: 07/30/2022
Project Number: PCU T75X-3G1
Description: PCU T75X-3G1 Assessment
Site: PCU T75X-3G1
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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

SAMPLE SUMMARY

20220727-T75X (SB-BG01) @ 5-7' L1520371-01 Solid

Collected by
Dustin H.

Collected date/time
07/27/22 09:45

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/12/22 00:02	08/12/22 00:02	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1905074	1	08/03/22 14:47	08/04/22 09:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1905492	1	08/04/22 13:09	08/08/22 16:11	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	08/02/22 17:09	08/03/22 19:41	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1904728	1	08/02/22 17:09	08/03/22 03:06	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 11:35	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904424	1	08/08/22 17:21	08/09/22 10:42	DSH	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

20220727-T75X (SB-BG01) @ 15-17.5' L1520371-02 Solid

Collected by
Dustin H.

Collected date/time
07/27/22 10:20

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/12/22 00:04	08/12/22 00:04	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1904902	1	08/03/22 10:00	08/03/22 12:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1905492	1	08/04/22 13:09	08/08/22 16:14	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	08/02/22 17:09	08/03/22 20:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1904728	1	08/02/22 17:09	08/03/22 03:24	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 11:49	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904424	1	08/08/22 17:21	08/09/22 11:42	DSH	Mt. Juliet, TN

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20220727-T75X (SB-BG01) @ 25-27.5' L1520371-03 Solid

Collected by
Dustin H.

Collected date/time
07/27/22 11:05

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/12/22 00:07	08/12/22 00:07	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1905074	1	08/03/22 14:47	08/04/22 09:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1905492	1	08/04/22 13:09	08/08/22 16:22	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904766	1	08/02/22 17:09	08/05/22 07:25	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1904728	1	08/02/22 17:09	08/03/22 03:43	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 12:03	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904424	1	08/08/22 17:21	08/09/22 12:01	DSH	Mt. Juliet, TN

20220727-T75X (SB-BG01) @ 35-37.5' L1520371-04 Solid

Collected by
Dustin H.

Collected date/time
07/27/22 11:40

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/12/22 00:10	08/12/22 00:10	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1904902	1	08/03/22 10:00	08/03/22 12:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1905492	1	08/04/22 13:09	08/08/22 16:25	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904766	1	08/02/22 17:09	08/05/22 07:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1904728	1	08/02/22 17:09	08/03/22 04:02	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 14:38	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904424	1	08/08/22 17:21	08/09/22 12:21	DSH	Mt. Juliet, TN

SAMPLE SUMMARY

20220727-T75X (SB-BG01) @ 45-47.5' L1520371-05 Solid

Collected by
Dustin H.

Collected date/time
07/27/22 12:05

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/12/22 00:13	08/12/22 00:13	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1904902	1	08/03/22 10:00	08/03/22 12:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1905492	1	08/04/22 13:09	08/08/22 16:28	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904766	1	08/02/22 17:09	08/05/22 08:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1904728	1	08/02/22 17:09	08/03/22 04:20	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1905032	1	08/03/22 16:39	08/04/22 09:49	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904424	1	08/08/22 17:21	08/09/22 12:41	DSH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

20220727-T75X (SB-BG01) @ 47.5-50' L1520371-06 Solid

Collected by
Dustin H.

Collected date/time
07/27/22 12:10

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/12/22 00:15	08/12/22 00:15	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1905074	1	08/03/22 14:47	08/04/22 09:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1905492	1	08/04/22 13:09	08/08/22 16:31	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904766	1	08/02/22 17:09	08/05/22 08:30	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1904728	1	08/02/22 17:09	08/03/22 04:39	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1905032	1	08/03/22 16:39	08/04/22 11:47	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1905032	5	08/03/22 16:39	08/04/22 14:55	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904424	1	08/08/22 17:21	08/09/22 14:21	DSH	Mt. Juliet, TN

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	9.05		1	08/12/2022 00:02	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.45	T8	1	08/04/2022 09:00	WG1905074

Sample Narrative:

L1520371-01 WG1905074: 9.45 at 23.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	632		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520371-01 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.494		0.200	1	08/08/2022 16:11	WG1905492

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 19:41	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	101		77.0-120		08/03/2022 19:41	WG1904763

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

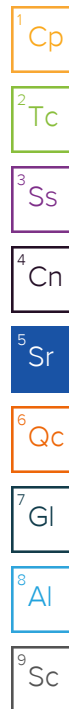
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/03/2022 03:06	WG1904728
1,3,5-Trimethylbenzene	ND		0.00500	1	08/03/2022 03:06	WG1904728
(S) Toluene-d8	100		75.0-131		08/03/2022 03:06	WG1904728
(S) 4-Bromofluorobenzene	110		67.0-138		08/03/2022 03:06	WG1904728
(S) 1,2-Dichloroethane-d4	107		70.0-130		08/03/2022 03:06	WG1904728

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/03/2022 11:35	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 11:35	WG1904418
(S) o-Terphenyl	77.9		18.0-148		08/03/2022 11:35	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/09/2022 10:42	WG1904424
2-Methylnaphthalene	ND		0.0200	1	08/09/2022 10:42	WG1904424
Naphthalene	ND		0.0200	1	08/09/2022 10:42	WG1904424
(S) p-Terphenyl-d14	57.3		23.0-120		08/09/2022 10:42	WG1904424



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	51.2		14.0-149		08/09/2022 10:42	WG1904424
(S) 2-Fluorobiphenyl	52.5		34.0-125		08/09/2022 10:42	WG1904424

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	7.62		1	08/12/2022 00:04	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.52	T8	1	08/03/2022 12:00	WG1904902

Sample Narrative:

L1520371-02 WG1904902: 8.52 at 24C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	230		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520371-02 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/08/2022 16:14	WG1905492

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 20:03	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	101		77.0-120		08/03/2022 20:03	WG1904763

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

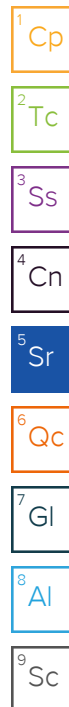
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/03/2022 03:24	WG1904728
1,3,5-Trimethylbenzene	ND		0.00500	1	08/03/2022 03:24	WG1904728
(S) Toluene-d8	102		75.0-131		08/03/2022 03:24	WG1904728
(S) 4-Bromofluorobenzene	106		67.0-138		08/03/2022 03:24	WG1904728
(S) 1,2-Dichloroethane-d4	101		70.0-130		08/03/2022 03:24	WG1904728

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/03/2022 11:49	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 11:49	WG1904418
(S) o-Terphenyl	72.5		18.0-148		08/03/2022 11:49	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/09/2022 11:42	WG1904424
2-Methylnaphthalene	ND		0.0200	1	08/09/2022 11:42	WG1904424
Naphthalene	ND		0.0200	1	08/09/2022 11:42	WG1904424
(S) p-Terphenyl-d14	63.9		23.0-120		08/09/2022 11:42	WG1904424



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	55.4		14.0-149		08/09/2022 11:42	WG1904424
(S) 2-Fluorobiphenyl	52.4		34.0-125		08/09/2022 11:42	WG1904424

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.87		1	08/12/2022 00:07	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.51	T8	1	08/04/2022 09:00	WG1905074

Sample Narrative:

L1520371-03 WG1905074: 8.51 at 23.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	254		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520371-03 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/08/2022 16:22	WG1905492

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/05/2022 07:25	WG1904766
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		08/05/2022 07:25	WG1904766

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

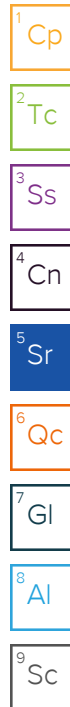
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/03/2022 03:43	WG1904728
1,3,5-Trimethylbenzene	ND		0.00500	1	08/03/2022 03:43	WG1904728
(S) Toluene-d8	101		75.0-131		08/03/2022 03:43	WG1904728
(S) 4-Bromofluorobenzene	106		67.0-138		08/03/2022 03:43	WG1904728
(S) 1,2-Dichloroethane-d4	98.9		70.0-130		08/03/2022 03:43	WG1904728

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/03/2022 12:03	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 12:03	WG1904418
(S) o-Terphenyl	78.9		18.0-148		08/03/2022 12:03	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/09/2022 12:01	WG1904424
2-Methylnaphthalene	ND		0.0200	1	08/09/2022 12:01	WG1904424
Naphthalene	ND		0.0200	1	08/09/2022 12:01	WG1904424
(S) p-Terphenyl-d14	67.1		23.0-120		08/09/2022 12:01	WG1904424



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	46.6		14.0-149		08/09/2022 12:01	WG1904424
(S) 2-Fluorobiphenyl	54.1		34.0-125		08/09/2022 12:01	WG1904424

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.99		1	08/12/2022 00:10	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	08/03/2022 12:00	WG1904902

Sample Narrative:

L1520371-04 WG1904902: 8.18 at 23.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	202		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520371-04 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/08/2022 16:25	WG1905492

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/05/2022 07:47	WG1904766
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/05/2022 07:47	WG1904766

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/03/2022 04:02	WG1904728
1,3,5-Trimethylbenzene	ND		0.00500	1	08/03/2022 04:02	WG1904728
(S) Toluene-d8	101		75.0-131		08/03/2022 04:02	WG1904728
(S) 4-Bromofluorobenzene	106		67.0-138		08/03/2022 04:02	WG1904728
(S) 1,2-Dichloroethane-d4	91.3		70.0-130		08/03/2022 04:02	WG1904728

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.35		4.00	1	08/03/2022 14:38	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 14:38	WG1904418
(S) o-Terphenyl	73.6		18.0-148		08/03/2022 14:38	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/09/2022 12:21	WG1904424
2-Methylnaphthalene	ND		0.0200	1	08/09/2022 12:21	WG1904424
Naphthalene	ND		0.0200	1	08/09/2022 12:21	WG1904424
(S) p-Terphenyl-d14	71.2		23.0-120		08/09/2022 12:21	WG1904424

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	48.0		14.0-149		08/09/2022 12:21	WG1904424
(S) 2-Fluorobiphenyl	59.7		34.0-125		08/09/2022 12:21	WG1904424

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.19		1	08/12/2022 00:13	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	T8	1	08/03/2022 12:00	WG1904902

Sample Narrative:

L1520371-05 WG1904902: 8.22 at 24C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	237		umhos/cm	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520371-05 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		mg/l	1	08/08/2022 16:28	WG1905492

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		mg/kg	1	08/05/2022 08:09	WG1904766
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		08/05/2022 08:09	WG1904766

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		mg/kg	1	08/03/2022 04:20	WG1904728
1,3,5-Trimethylbenzene	ND		0.00500	1	08/03/2022 04:20	WG1904728
(S) Toluene-d8	99.1		75.0-131		08/03/2022 04:20	WG1904728
(S) 4-Bromofluorobenzene	107		67.0-138		08/03/2022 04:20	WG1904728
(S) 1,2-Dichloroethane-d4	94.7		70.0-130		08/03/2022 04:20	WG1904728

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		mg/kg	1	08/04/2022 09:49	WG1905032
C28-C36 Motor Oil Range	ND		4.00	1	08/04/2022 09:49	WG1905032
(S) o-Terphenyl	48.5		18.0-148		08/04/2022 09:49	WG1905032

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		mg/kg	1	08/09/2022 12:41	WG1904424
2-Methylnaphthalene	ND		0.0200	1	08/09/2022 12:41	WG1904424
Naphthalene	ND		0.0200	1	08/09/2022 12:41	WG1904424
(S) p-Terphenyl-d14	69.1		23.0-120		08/09/2022 12:41	WG1904424

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	53.7		14.0-149		08/09/2022 12:41	WG1904424
(S) 2-Fluorobiphenyl	57.9		34.0-125		08/09/2022 12:41	WG1904424

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.32		1	08/12/2022 00:15	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.34	T8	1	08/04/2022 09:00	WG1905074

Sample Narrative:

L1520371-06 WG1905074: 8.34 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	280		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520371-06 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/08/2022 16:31	WG1905492

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/05/2022 08:30	WG1904766
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		08/05/2022 08:30	WG1904766

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

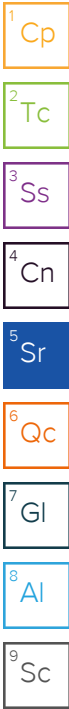
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/03/2022 04:39	WG1904728
1,3,5-Trimethylbenzene	ND		0.00500	1	08/03/2022 04:39	WG1904728
(S) Toluene-d8	98.9		75.0-131		08/03/2022 04:39	WG1904728
(S) 4-Bromofluorobenzene	109		67.0-138		08/03/2022 04:39	WG1904728
(S) 1,2-Dichloroethane-d4	108		70.0-130		08/03/2022 04:39	WG1904728

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	63.1		4.00	1	08/04/2022 11:47	WG1905032
C28-C36 Motor Oil Range	206		20.0	5	08/04/2022 14:55	WG1905032
(S) o-Terphenyl	38.3		18.0-148		08/04/2022 11:47	WG1905032
(S) o-Terphenyl	37.2		18.0-148		08/04/2022 14:55	WG1905032

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/09/2022 14:21	WG1904424
2-Methylnaphthalene	ND		0.0200	1	08/09/2022 14:21	WG1904424
Naphthalene	ND		0.0200	1	08/09/2022 14:21	WG1904424



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) p-Terphenyl-d14	69.2		23.0-120		08/09/2022 14:21	WG1904424
(S) Nitrobenzene-d5	58.0		14.0-149		08/09/2022 14:21	WG1904424
(S) 2-Fluorobiphenyl	62.8		34.0-125		08/09/2022 14:21	WG1904424

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520320-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1520320-05 08/03/22 12:00 • (DUP) R3822152-2 08/03/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.45	7.44	1	0.134		1

Sample Narrative:

OS: 7.45 at 25.4C

DUP: 7.44 at 25.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520371-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1520371-02 08/03/22 12:00 • (DUP) R3822152-3 08/03/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.52	8.55	1	0.351		1

Sample Narrative:

OS: 8.52 at 24C

DUP: 8.55 at 24.6C

Laboratory Control Sample (LCS)

(LCS) R3822152-1 08/03/22 12:00

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

Sample Narrative:

LCS: 9.91 at 24.4C

L1519928-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1519928-02 08/04/22 09:00 • (DUP) R3822527-2 08/04/22 09:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.93	7.91	1	0.253		1

Sample Narrative:

OS: 7.93 at 23.6C

DUP: 7.91 at 23.7C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520560-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1520560-02 08/04/22 09:00 • (DUP) R3822527-3 08/04/22 09:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.98	7.97	1	0.125		1

Sample Narrative:

OS: 7.98 at 23.6C

DUP: 7.97 at 23.9C

Laboratory Control Sample (LCS)

(LCS) R3822527-1 08/04/22 09:00

	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: 10.01 at 23.5C

Method Blank (MB)

(MB) R3826526-2 08/15/22 18:00

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

Sample Narrative:
BLANK: at 25C

L1520348-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1520348-06 08/15/22 18:00 • (DUP) R3826526-4 08/15/22 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	586	550	1	6.34		20

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

L1521215-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521215-01 08/15/22 18:00 • (DUP) R3826526-5 08/15/22 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2620	2540	1	3.26		20

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

Laboratory Control Sample (LCS)

(LCS) R3826526-3 08/15/22 18:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	286	280	97.8	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3823945-1 08/08/22 15:48

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) R3823945-2 08/08/22 15:51 • (LCSD) R3823945-3 08/08/22 15:53

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	1.02	1.02	102	102	80.0-120			0.228	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3824561-2 08/03/22 12:02

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)	102			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3824561-1 08/03/22 11:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.81	87.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3823529-3 08/05/22 03:50

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)	111			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3823529-2 08/05/22 03:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.42	98.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			95.8	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3823541-3 08/03/22 01:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	101			75.0-131
(S) 4-Bromofluorobenzene	105			67.0-138
(S) 1,2-Dichloroethane-d4	96.8			70.0-130

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

(LCS) R3823541-1 08/02/22 23:58 • (LCSD) R3823541-2 08/03/22 00:54

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 %
1,2,4-Trimethylbenzene	0.125	0.130	0.124	104	99.2	70.0-126			4.72	20
1,3,5-Trimethylbenzene	0.125	0.128	0.125	102	100	73.0-127			2.37	20
(S) Toluene-d8				99.9	98.6	75.0-131				
(S) 4-Bromofluorobenzene				110	106	67.0-138				
(S) 1,2-Dichloroethane-d4				105	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3822369-1 08/03/22 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.968	⬇	0.274	4.00
(S) o-Terphenyl	94.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3822369-2 08/03/22 11:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.6	83.2	50.0-150	
(S) o-Terphenyl			102	18.0-148	

L1520326-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520326-10 08/03/22 15:20 • (MS) R3822369-3 08/03/22 15:34 • (MSD) R3822369-4 08/03/22 15:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.5	ND	44.8	41.1	88.9	81.8	1	50.0-150			8.61	20
(S) o-Terphenyl					82.0	86.6		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3822759-1 08/04/22 09:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.279	⬇	0.274	4.00
(S) o-Terphenyl	72.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3822759-2 08/04/22 09:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.4	64.8	50.0-150	
(S) o-Terphenyl			83.2	18.0-148	

L1520363-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520363-03 08/04/22 15:08 • (MS) R3822759-3 08/04/22 15:22 • (MSD) R3822759-4 08/04/22 15:35

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	694	242	243	0.000	0.000	5	50.0-150	⬇	⬇	0.412	20
(S) o-Terphenyl					63.1	59.3		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3824261-2 08/09/22 09:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	67.7			23.0-120
(S) Nitrobenzene-d5	43.9			14.0-149
(S) 2-Fluorobiphenyl	54.9			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3824261-1 08/09/22 09:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0542	67.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0565	70.6	50.0-120	
Naphthalene	0.0800	0.0516	64.5	50.0-120	
(S) p-Terphenyl-d14			69.7	23.0-120	
(S) Nitrobenzene-d5			58.9	14.0-149	
(S) 2-Fluorobiphenyl			64.6	34.0-125	

L1520371-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520371-01 08/09/22 10:42 • (MS) R3824261-3 08/09/22 11:02 • (MSD) R3824261-4 08/09/22 11:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.0800	ND	0.0390	0.0423	48.8	52.9	1	10.0-142			8.12	28
2-Methylnaphthalene	0.0800	ND	0.0400	0.0427	50.0	53.4	1	10.0-137			6.53	28
Naphthalene	0.0800	ND	0.0353	0.0388	44.1	48.5	1	10.0-135			9.45	27
(S) p-Terphenyl-d14					50.4	57.0		23.0-120				
(S) Nitrobenzene-d5					43.4	49.5		14.0-149				
(S) 2-Fluorobiphenyl					48.1	52.9		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.

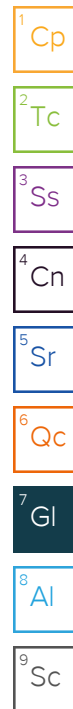
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
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.



[illegible]


7/30-NCF-L1520371 CAERUSPCO


R5

Time estimate: oh

Time spent: oh

Members

 Hailey Melson (responsible)

 Chris Ward

Due on 3 August 2022 8:00 AM for target Done

- ☐ Parameter(s) past holding time
- ☐ Temperature not in range
- ☐ Improper container type
- ☐ pH not in range
- ☐ Insufficient sample volume
- ☐ Sample is biphasic
- ☐ Vials received with headspace
- ☒ Broken container
- ☐ Sufficient sample remains
- ☐ If broken container: Insufficient packing material around container
- ☐ If broken container: Insufficient packing material inside cooler
- ☐ If broken container: Improper handling by carrier: _____
- ☐ If broken container: Sample was frozen
- ☐ If broken container: Container lid not intact
- ☐ Client informed by Call
- ☐ Client informed by Email
- ☐ Client informed by Voicemail
- ☐ Date/Time: _____
- ☐ PM initials: _____
- ☐ Client Contact: _____

Comments

Hailey Melson	30 July 2022 1:20 PM
1-8oz received Broken for ID: 202207227-T15X 35-37.5 Sample was salvaged into a new 8oz jar.	
Chris Ward	1 August 2022 10:08 AM
Please proceed with analysis. Make note to prioritize non-damaged volume	
Matthew Shacklock	1 August 2022 10:55 AM
Done	



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D37609

Site: PCU 297-11A

Report Date 8/21/2012 10:49:03 AM

On 08/16/2012, 8 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.0 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D37609 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP8179

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D37604-1MS, D37604-1MSD, D37604-1SDL were used as the QC samples for the metals analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN16356

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Page 1 of 1

Job Number: D37609
Account: XTO Energy
Project: PCU 297-11A
Collected: 08/14/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D37609-1	BACKGROUND 1					
Arsenic		5.3	0.10	0.062	mg/kg	SW846 6020A
D37609-2	BACKGROUND 2					
Arsenic		3.5	0.11	0.067	mg/kg	SW846 6020A
D37609-3	BACKGROUND 3					
Arsenic		5.0	0.11	0.063	mg/kg	SW846 6020A
D37609-4	BACKGROUND 4					
Arsenic		4.8	0.11	0.066	mg/kg	SW846 6020A
D37609-5	BACKGROUND 5					
Arsenic		4.1	0.12	0.074	mg/kg	SW846 6020A
D37609-6	BACKGROUND 6					
Arsenic		6.5	0.10	0.063	mg/kg	SW846 6020A
D37609-7	BACKGROUND 7					
Arsenic		6.2	0.12	0.069	mg/kg	SW846 6020A
D37609-8	BACKGROUND 8					
Arsenic		4.9	0.11	0.067	mg/kg	SW846 6020A

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	BACKGROUND 1	Date Sampled:	08/14/12
Lab Sample ID:	D37609-1	Date Received:	08/16/12
Matrix:	SO - Soil	Percent Solids:	92.1
Project:	PCU 297-11A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.3	0.10	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Report of Analysis

Client Sample ID: BACKGROUND 2
Lab Sample ID: D37609-2
Matrix: SO - Soil
Project: PCU 297-11A

Date Sampled: 08/14/12
Date Received: 08/16/12
Percent Solids: 91.9

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	3.5	0.11	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: BACKGROUND 3
Lab Sample ID: D37609-3
Matrix: SO - Soil
Project: PCU 297-11A

Date Sampled: 08/14/12
Date Received: 08/16/12
Percent Solids: 93.0

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.0	0.11	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BACKGROUND 4	Date Sampled:	08/14/12
Lab Sample ID:	D37609-4	Date Received:	08/16/12
Matrix:	SO - Soil	Percent Solids:	92.9
Project:	PCU 297-11A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.8	0.11	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BACKGROUND 5	Date Sampled:	08/14/12
Lab Sample ID:	D37609-5	Date Received:	08/16/12
Matrix:	SO - Soil	Percent Solids:	81.1
Project:	PCU 297-11A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.1	0.12	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BACKGROUND 6	Date Sampled:	08/14/12
Lab Sample ID:	D37609-6	Date Received:	08/16/12
Matrix:	SO - Soil	Percent Solids:	93.4
Project:	PCU 297-11A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.5	0.10	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BACKGROUND 7	Date Sampled:	08/14/12
Lab Sample ID:	D37609-7	Date Received:	08/16/12
Matrix:	SO - Soil	Percent Solids:	87.5
Project:	PCU 297-11A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.2	0.12	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BACKGROUND 8	Date Sampled:	08/14/12
Lab Sample ID:	D37609-8	Date Received:	08/16/12
Matrix:	SO - Soil	Percent Solids:	90.4
Project:	PCU 297-11A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.9	0.11	mg/kg	5	08/17/12	08/21/12 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2727
(2) Prep QC Batch: MP8179

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D37609

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 8/16/2012 11:45:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO

Airbill #'s: CO

Cooler Security
Y or N
Y or N

- | | |
|--|--|
| 1. Custody Seals Present: <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> <input type="checkbox"/> | 4. Smpl Dates/Time OK <input checked="" type="checkbox"/> <input type="checkbox"/> |

Cooler Temperature
Y or N

- | | |
|---|---|
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> <input type="checkbox"/> | 2. Cooler temp verification: Infrared gun |
| 3. Cooler media: Ice (bag) | |

Quality Control Preservation
Y or N
N/A

- | | |
|---|---|
| 1. Trip Blank present / cooler: <input type="checkbox"/> <input type="checkbox"/> | 2. Trip Blank listed on COC: <input type="checkbox"/> <input type="checkbox"/> |
| 3. Samples preserved properly: <input checked="" type="checkbox"/> <input type="checkbox"/> | 4. VOCs headspace free: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |

Sample Integrity - Documentation
Y or N

- | | |
|---|--|
| 1. Sample labels present on bottles: <input checked="" type="checkbox"/> <input type="checkbox"/> | 2. Container labeling complete: <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3. Sample container label / COC agree: <input checked="" type="checkbox"/> <input type="checkbox"/> | |

Sample Integrity - Condition
Y or N

- | | |
|---|---|
| 1. Sample recvd within HT: <input checked="" type="checkbox"/> <input type="checkbox"/> | 2. All containers accounted for: <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3. Condition of sample: Intact | |

Sample Integrity - Instructions
Y or N N/A

- | | |
|--|--|
| 1. Analysis requested is clear: <input checked="" type="checkbox"/> <input type="checkbox"/> | 2. Bottles received for unspecified tests: <input type="checkbox"/> <input checked="" type="checkbox"/> |
| 3. Sufficient volume rec'd for analysis: <input checked="" type="checkbox"/> <input type="checkbox"/> | 4. Compositing instructions clear: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | |

Comments

 Accutest Laboratories
 V: (303) 425-6021

 4036 Youngfield Street
 F: (303) 425-6854

 Wheat Ridge, CO
 www.accutest.com

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D37609
Account: XTOKRWR - XTO Energy
Project: PCU 297-11A

QC Batch ID: MP8179
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 08/17/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.042	.06	-0.00080	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP8179: D37609-1, D37609-2, D37609-3, D37609-4, D37609-5, D37609-6, D37609-7, D37609-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D37609
Account: XTOKRWR - XTO Energy
Project: PCU 297-11A

QC Batch ID: MP8179
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 08/17/12

Metal	D37604-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	9.7	126	116	99.9 75-125
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8179: D37609-1, D37609-2, D37609-3, D37609-4, D37609-5, D37609-6, D37609-7, D37609-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D37609
Account: XTOKRWR - XTO Energy
Project: PCU 297-11A

QC Batch ID: MP8179
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 08/17/12

Metal	D37604-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	9.7	124	113	101.2	1.6	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8179: D37609-1, D37609-2, D37609-3, D37609-4, D37609-5, D37609-6, D37609-7, D37609-8

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D37609
 Account: XTOKRWR - XTO Energy
 Project: PCU 297-11A

QC Batch ID: MP8179
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 08/17/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	102	100	102.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8179: D37609-1, D37609-2, D37609-3, D37609-4, D37609-5, D37609-6, D37609-7, D37609-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D37609
 Account: XTOKRWR - XTO Energy
 Project: PCU 297-11A

QC Batch ID: MP8179
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 08/17/12

Metal	D37604-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	83.4	79.2	5.0	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8179: D37609-1, D37609-2, D37609-3, D37609-4, D37609-5, D37609-6, D37609-7, D37609-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

Caerus Oil and Gas

Sample Delivery Group: L1520348
Samples Received: 07/30/2022
Project Number: PCU T75X-3G1
Description: PCU T75X-3G1 Assessment
Site: PCU T75X-3G1
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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

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SAMPLE SUMMARY

20220728-T75X (SB-BG02) @ 5-7.5' L1520348-01 Solid

Collected by
Kevin Fletcher

Collected date/time
07/28/22 09:15

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/11/22 23:40	08/11/22 23:40	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1904902	1	08/03/22 10:00	08/03/22 12:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910886	1	08/15/22 09:00	08/15/22 17:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1903923	1	08/01/22 14:46	08/03/22 20:02	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	07/30/22 16:41	08/03/22 17:24	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1903840	1	07/30/22 16:41	08/01/22 16:02	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 15:06	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904399	1	08/02/22 23:14	08/03/22 13:16	DSH	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

20220728-T75X (SB-BG02) @ 15-17.5' L1520348-02 Solid

Collected by
Kevin Fletcher

Collected date/time
07/28/22 09:35

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/11/22 23:42	08/11/22 23:42	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1904878	1	08/03/22 09:56	08/03/22 12:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910886	1	08/15/22 09:00	08/15/22 17:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1903923	1	08/01/22 14:46	08/03/22 20:05	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	07/30/22 16:41	08/03/22 17:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1903840	1	07/30/22 16:41	08/01/22 16:21	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 12:45	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904399	1	08/02/22 23:14	08/03/22 14:09	DSH	Mt. Juliet, TN

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20220728-T75X (SB-BG02) @ 25-27.5' L1520348-03 Solid

Collected by
Kevin Fletcher

Collected date/time
07/28/22 10:00

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/11/22 23:45	08/11/22 23:45	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1905074	1	08/03/22 14:47	08/04/22 09:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1903923	1	08/01/22 14:46	08/03/22 20:08	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	07/30/22 16:41	08/03/22 18:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1903840	1	07/30/22 16:41	08/01/22 16:41	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 13:42	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904399	1	08/02/22 23:14	08/03/22 14:27	DSH	Mt. Juliet, TN

20220728-T75X (SB-BG02) @ 35-37.5' L1520348-04 Solid

Collected by
Kevin Fletcher

Collected date/time
07/28/22 10:30

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/11/22 23:53	08/11/22 23:53	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1905074	1	08/03/22 14:47	08/04/22 09:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1903923	1	08/01/22 14:46	08/03/22 20:16	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	07/30/22 16:41	08/03/22 18:32	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1903840	1	07/30/22 16:41	08/01/22 17:01	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 12:59	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904399	1	08/02/22 23:14	08/03/22 14:45	DSH	Mt. Juliet, TN

SAMPLE SUMMARY

20220728-T75X (SB-BG02) @ 45-47.5' L1520348-05 Solid

Collected by
Kevin Fletcher

Collected date/time
07/28/22 10:55

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/11/22 23:56	08/11/22 23:56	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1905074	1	08/03/22 14:47	08/04/22 09:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1903923	1	08/01/22 14:46	08/03/22 20:18	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	07/30/22 16:41	08/03/22 18:55	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1903840	1	07/30/22 16:41	08/01/22 17:21	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 16:17	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904399	1	08/02/22 23:14	08/03/22 15:03	DSH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

20220728-T75X (SB-BG02) @ 47.5-50' L1520348-06 Solid

Collected by
Kevin Fletcher

Collected date/time
07/28/22 11:00

Received date/time
07/30/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1908119	1	08/11/22 23:59	08/11/22 23:59	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1904902	1	08/03/22 10:00	08/03/22 12:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1910997	1	08/15/22 11:00	08/15/22 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1903923	1	08/01/22 14:46	08/03/22 20:21	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1904763	1	07/30/22 16:41	08/03/22 19:18	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1903840	1	07/30/22 16:41	08/01/22 17:40	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1904418	1	08/03/22 05:19	08/03/22 16:03	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1904399	1	08/02/22 23:14	08/03/22 15:21	DSH	Mt. Juliet, TN

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	17.5		1	08/11/2022 23:40	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.01	T8	1	08/03/2022 12:00	WG1904902

Sample Narrative:

L1520348-01 WG1904902: 9.01 at 23.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	496		10.0	1	08/15/2022 17:00	WG1910886

Sample Narrative:

L1520348-01 WG1910886: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/03/2022 20:02	WG1903923

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.434		0.100	1	08/03/2022 17:24	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	101		77.0-120		08/03/2022 17:24	WG1904763

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/01/2022 16:02	WG1903840
1,3,5-Trimethylbenzene	ND		0.00500	1	08/01/2022 16:02	WG1903840
(S) Toluene-d8	99.4		75.0-131		08/01/2022 16:02	WG1903840
(S) 4-Bromofluorobenzene	101		67.0-138		08/01/2022 16:02	WG1903840
(S) 1,2-Dichloroethane-d4	96.8		70.0-130		08/01/2022 16:02	WG1903840

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.55		4.00	1	08/03/2022 15:06	WG1904418
C28-C36 Motor Oil Range	6.05	B	4.00	1	08/03/2022 15:06	WG1904418
(S) o-Terphenyl	75.4		18.0-148		08/03/2022 15:06	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/03/2022 13:16	WG1904399
2-Methylnaphthalene	ND		0.0200	1	08/03/2022 13:16	WG1904399
Naphthalene	ND		0.0200	1	08/03/2022 13:16	WG1904399
(S) p-Terphenyl-d14	86.8		23.0-120		08/03/2022 13:16	WG1904399

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	61.3		14.0-149		08/03/2022 13:16	WG1904399
(S) 2-Fluorobiphenyl	71.2		34.0-125		08/03/2022 13:16	WG1904399

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.7		1	08/11/2022 23:42	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.98	T8	1	08/03/2022 12:00	WG1904878

Sample Narrative:

L1520348-02 WG1904878: 8.98 at 23.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	282		10.0	1	08/15/2022 17:00	WG1910886

Sample Narrative:

L1520348-02 WG1910886: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/03/2022 20:05	WG1903923

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 17:47	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	102		77.0-120		08/03/2022 17:47	WG1904763

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/01/2022 16:21	WG1903840
1,3,5-Trimethylbenzene	ND		0.00500	1	08/01/2022 16:21	WG1903840
(S) Toluene-d8	104		75.0-131		08/01/2022 16:21	WG1903840
(S) 4-Bromofluorobenzene	105		67.0-138		08/01/2022 16:21	WG1903840
(S) 1,2-Dichloroethane-d4	93.9		70.0-130		08/01/2022 16:21	WG1903840

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/03/2022 12:45	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 12:45	WG1904418
(S) o-Terphenyl	74.1		18.0-148		08/03/2022 12:45	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/03/2022 14:09	WG1904399
2-Methylnaphthalene	ND		0.0200	1	08/03/2022 14:09	WG1904399
Naphthalene	ND		0.0200	1	08/03/2022 14:09	WG1904399
(S) p-Terphenyl-d14	92.6		23.0-120		08/03/2022 14:09	WG1904399

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	68.3		14.0-149		08/03/2022 14:09	WG1904399
(S) 2-Fluorobiphenyl	74.2		34.0-125		08/03/2022 14:09	WG1904399

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.6		1	08/11/2022 23:45	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.53	T8	1	08/04/2022 09:00	WG1905074

Sample Narrative:

L1520348-03 WG1905074: 8.53 at 23.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	325		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520348-03 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/03/2022 20:08	WG1903923

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 18:09	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	101		77.0-120		08/03/2022 18:09	WG1904763

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

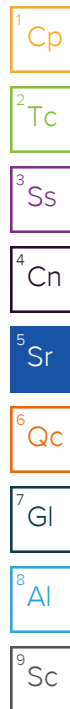
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/01/2022 16:41	WG1903840
1,3,5-Trimethylbenzene	ND		0.00500	1	08/01/2022 16:41	WG1903840
(S) Toluene-d8	104		75.0-131		08/01/2022 16:41	WG1903840
(S) 4-Bromofluorobenzene	104		67.0-138		08/01/2022 16:41	WG1903840
(S) 1,2-Dichloroethane-d4	97.8		70.0-130		08/01/2022 16:41	WG1903840

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/03/2022 13:42	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 13:42	WG1904418
(S) o-Terphenyl	67.8		18.0-148		08/03/2022 13:42	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/03/2022 14:27	WG1904399
2-Methylnaphthalene	ND		0.0200	1	08/03/2022 14:27	WG1904399
Naphthalene	ND		0.0200	1	08/03/2022 14:27	WG1904399
(S) p-Terphenyl-d14	94.3		23.0-120		08/03/2022 14:27	WG1904399



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	64.9		14.0-149		08/03/2022 14:27	WG1904399
(S) 2-Fluorobiphenyl	63.9		34.0-125		08/03/2022 14:27	WG1904399

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	9.09		1	08/11/2022 23:53	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	T8	1	08/04/2022 09:00	WG1905074

Sample Narrative:

L1520348-04 WG1905074: 8.32 at 23.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	331		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520348-04 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.579		0.200	1	08/03/2022 20:16	WG1903923

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 18:32	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	102		77.0-120		08/03/2022 18:32	WG1904763

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

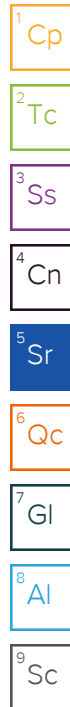
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/01/2022 17:01	WG1903840
1,3,5-Trimethylbenzene	ND		0.00500	1	08/01/2022 17:01	WG1903840
(S) Toluene-d8	101		75.0-131		08/01/2022 17:01	WG1903840
(S) 4-Bromofluorobenzene	101		67.0-138		08/01/2022 17:01	WG1903840
(S) 1,2-Dichloroethane-d4	97.2		70.0-130		08/01/2022 17:01	WG1903840

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	08/03/2022 12:59	WG1904418
C28-C36 Motor Oil Range	ND		4.00	1	08/03/2022 12:59	WG1904418
(S) o-Terphenyl	75.0		18.0-148		08/03/2022 12:59	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/03/2022 14:45	WG1904399
2-Methylnaphthalene	ND		0.0200	1	08/03/2022 14:45	WG1904399
Naphthalene	ND		0.0200	1	08/03/2022 14:45	WG1904399
(S) p-Terphenyl-d14	93.4		23.0-120		08/03/2022 14:45	WG1904399



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	68.8		14.0-149		08/03/2022 14:45	WG1904399
(S) 2-Fluorobiphenyl	81.1		34.0-125		08/03/2022 14:45	WG1904399

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.53		1	08/11/2022 23:56	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.36	T8	1	08/04/2022 09:00	WG1905074

Sample Narrative:

L1520348-05 WG1905074: 8.36 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	302		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520348-05 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	08/03/2022 20:18	WG1903923

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 18:55	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	101		77.0-120		08/03/2022 18:55	WG1904763

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

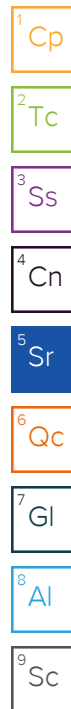
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/01/2022 17:21	WG1903840
1,3,5-Trimethylbenzene	ND		0.00500	1	08/01/2022 17:21	WG1903840
(S) Toluene-d8	106		75.0-131		08/01/2022 17:21	WG1903840
(S) 4-Bromofluorobenzene	104		67.0-138		08/01/2022 17:21	WG1903840
(S) 1,2-Dichloroethane-d4	96.1		70.0-130		08/01/2022 17:21	WG1903840

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	20.0		4.00	1	08/03/2022 16:17	WG1904418
C28-C36 Motor Oil Range	47.2		4.00	1	08/03/2022 16:17	WG1904418
(S) o-Terphenyl	73.0		18.0-148		08/03/2022 16:17	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/03/2022 15:03	WG1904399
2-Methylnaphthalene	ND		0.0200	1	08/03/2022 15:03	WG1904399
Naphthalene	ND		0.0200	1	08/03/2022 15:03	WG1904399
(S) p-Terphenyl-d14	109		23.0-120		08/03/2022 15:03	WG1904399



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	73.0		14.0-149		08/03/2022 15:03	WG1904399
(S) 2-Fluorobiphenyl	96.6		34.0-125		08/03/2022 15:03	WG1904399

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	8.09		1	08/11/2022 23:59	WG1908119

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.36	T8	1	08/03/2022 12:00	WG1904902

Sample Narrative:

L1520348-06 WG1904902: 8.36 at 23.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	586		10.0	1	08/15/2022 18:00	WG1910997

Sample Narrative:

L1520348-06 WG1910997: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.212		0.200	1	08/03/2022 20:21	WG1903923

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	08/03/2022 19:18	WG1904763
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		08/03/2022 19:18	WG1904763

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

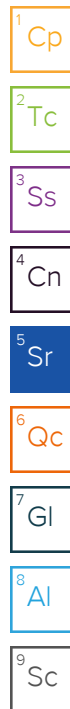
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,2,4-Trimethylbenzene	ND		0.00500	1	08/01/2022 17:40	WG1903840
1,3,5-Trimethylbenzene	ND		0.00500	1	08/01/2022 17:40	WG1903840
(S) Toluene-d8	103		75.0-131		08/01/2022 17:40	WG1903840
(S) 4-Bromofluorobenzene	101		67.0-138		08/01/2022 17:40	WG1903840
(S) 1,2-Dichloroethane-d4	94.4		70.0-130		08/01/2022 17:40	WG1903840

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	11.2		4.00	1	08/03/2022 16:03	WG1904418
C28-C36 Motor Oil Range	32.6		4.00	1	08/03/2022 16:03	WG1904418
(S) o-Terphenyl	69.0		18.0-148		08/03/2022 16:03	WG1904418

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	08/03/2022 15:21	WG1904399
2-Methylnaphthalene	ND		0.0200	1	08/03/2022 15:21	WG1904399
Naphthalene	ND		0.0200	1	08/03/2022 15:21	WG1904399
(S) p-Terphenyl-d14	80.7		23.0-120		08/03/2022 15:21	WG1904399



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	59.9		14.0-149		08/03/2022 15:21	WG1904399
(S) 2-Fluorobiphenyl	71.3		34.0-125		08/03/2022 15:21	WG1904399

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520009-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1520009-05 08/03/22 12:00 • (DUP) R3822204-2 08/03/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.77	7.74	1	0.387		1

Sample Narrative:

OS: 7.77 at 23.9C

DUP: 7.74 at 24C

L1520326-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1520326-05 08/03/22 12:00 • (DUP) R3822204-3 08/03/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.44	7.41	1	0.404		1

Sample Narrative:

OS: 7.44 at 23.9C

DUP: 7.41 at 24C

Laboratory Control Sample (LCS)

(LCS) R3822204-1 08/03/22 12:00

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

Sample Narrative:

LCS: 9.99 at 23.5C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520320-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1520320-05 08/03/22 12:00 • (DUP) R3822152-2 08/03/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.45	7.44	1	0.134		1

Sample Narrative:

OS: 7.45 at 25.4C

DUP: 7.44 at 25.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520371-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1520371-02 08/03/22 12:00 • (DUP) R3822152-3 08/03/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.52	8.55	1	0.351		1

Sample Narrative:

OS: 8.52 at 24C

DUP: 8.55 at 24.6C

Laboratory Control Sample (LCS)

(LCS) R3822152-1 08/03/22 12:00

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

Sample Narrative:

LCS: 9.91 at 24.4C

L1519928-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1519928-02 08/04/22 09:00 • (DUP) R3822527-2 08/04/22 09:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.93	7.91	1	0.253		1

Sample Narrative:

OS: 7.93 at 23.6C

DUP: 7.91 at 23.7C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1520560-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1520560-02 08/04/22 09:00 • (DUP) R3822527-3 08/04/22 09:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.98	7.97	1	0.125		1

Sample Narrative:

OS: 7.98 at 23.6C

DUP: 7.97 at 23.9C

Laboratory Control Sample (LCS)

(LCS) R3822527-1 08/04/22 09:00

	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: 10.01 at 23.5C

Method Blank (MB)

(MB) R3826510-2 08/15/22 17:00

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

Sample Narrative:

BLANK: at 25C

L1519990-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1519990-01 08/15/22 17:00 • (DUP) R3826510-4 08/15/22 17:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2770	2640	1	4.95		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1519994-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1519994-03 08/15/22 17:00 • (DUP) R3826510-5 08/15/22 17:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	12100	13300	1	9.84		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3826510-3 08/15/22 17:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	286	281	98.1	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3826526-2 08/15/22 18:00

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

Sample Narrative:

BLANK: at 25C

L1520348-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1520348-06 08/15/22 18:00 • (DUP) R3826526-4 08/15/22 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	586	550	1	6.34		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1521215-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521215-01 08/15/22 18:00 • (DUP) R3826526-5 08/15/22 18:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2620	2540	1	3.26		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3826526-3 08/15/22 18:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	286	280	97.8	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3822405-1 08/03/22 19:07

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) R3822405-2 08/03/22 19:10 • (LCSD) R3822405-3 08/03/22 19:12

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	1.15	1.06	115	106	80.0-120			8.67	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3824561-2 08/03/22 12:02

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)	102			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3824561-1 08/03/22 11:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.81	87.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3822067-3 08/01/22 12:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	97.8			67.0-138
(S) 1,2-Dichloroethane-d4	96.5			70.0-130

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

(LCS) R3822067-1 08/01/22 10:48 • (LCSD) R3822067-2 08/01/22 11:07

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 %
1,2,4-Trimethylbenzene	0.125	0.136	0.151	109	121	70.0-126			10.5	20
1,3,5-Trimethylbenzene	0.125	0.128	0.139	102	111	73.0-127			8.24	20
(S) Toluene-d8				100	101	75.0-131				
(S) 4-Bromofluorobenzene				98.4	101	67.0-138				
(S) 1,2-Dichloroethane-d4				98.3	101	70.0-130				

L1520327-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520327-01 08/01/22 18:19 • (MS) R3822067-4 08/01/22 19:18 • (MSD) R3822067-5 08/01/22 19:38

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 %
1,2,4-Trimethylbenzene	5.00	380	356	346	0.000	0.000	40	10.0-160	E V	E V	2.85	36
1,3,5-Trimethylbenzene	5.00	260	248	245	0.000	0.000	40	10.0-160	E V	E V	1.22	38
(S) Toluene-d8					100	101		75.0-131				
(S) 4-Bromofluorobenzene					115	113		67.0-138				
(S) 1,2-Dichloroethane-d4					92.8	92.8		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3822369-1 08/03/22 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.968	⬇	0.274	4.00
(S) o-Terphenyl	94.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3822369-2 08/03/22 11:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.6	83.2	50.0-150	
(S) o-Terphenyl			102	18.0-148	

L1520326-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520326-10 08/03/22 15:20 • (MS) R3822369-3 08/03/22 15:34 • (MSD) R3822369-4 08/03/22 15:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.5	ND	44.8	41.1	88.9	81.8	1	50.0-150			8.61	20
(S) o-Terphenyl					82.0	86.6		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3822463-2 08/03/22 09:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	102			23.0-120
(S) Nitrobenzene-d5	77.8			14.0-149
(S) 2-Fluorobiphenyl	92.9			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3822463-1 08/03/22 09:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0733	91.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0750	93.8	50.0-120	
Naphthalene	0.0800	0.0690	86.3	50.0-120	
(S) p-Terphenyl-d14			102	23.0-120	
(S) Nitrobenzene-d5			74.8	14.0-149	
(S) 2-Fluorobiphenyl			94.0	34.0-125	

L1520348-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520348-01 08/03/22 13:16 • (MS) R3822463-3 08/03/22 13:33 • (MSD) R3822463-4 08/03/22 13:51

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 %
1-Methylnaphthalene	0.0780	ND	0.0729	0.0626	93.5	79.4	1	10.0-142			15.2	28
2-Methylnaphthalene	0.0780	ND	0.0734	0.0623	94.1	79.1	1	10.0-137			16.4	28
Naphthalene	0.0780	ND	0.0697	0.0591	89.4	75.0	1	10.0-135			16.5	27
(S) p-Terphenyl-d14					101	117		23.0-120				
(S) Nitrobenzene-d5					67.5	79.5		14.0-149				
(S) 2-Fluorobiphenyl					87.3	96.8		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

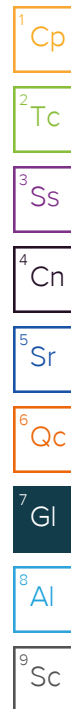
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Qualifier	Description
B	The same analyte is found in the associated blank.
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.
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.



ENCLOSURE D – OPERATOR KNOWLEDGE

Complete Water Analysis

Customer: **CAERUS OPERATING LLC**

Geographic Region: **Piceance Field**

Geographic Location: **N/A**

System Description: **Production System**

Equipment Description: **Black Sulfur Facility**

Sample Point: **Outlet**

Sample ID: **AS03814**

Account Rep: **stsevere@championx.com**

Collection Date: **09/14/2021**

Receive Date: **09/16/2021**

Report Date: **09/17/2021**

Location Code: **474107**

Field Analysis

<u>Analysis</u>	<u>Result</u>	<u>Analysis Method</u>
Bicarbonate	1586.00 mg/L	Titration
Carbonate	Not Detected mg/L	
Dissolved CO2	22.00 mg/L	
Dissolved H2S	1.00 mg/L	
Pressure Surface	1 psi	
Temperature	70 °F	
pH of Water	6.81	

Sample Analysis

<u>Analysis</u>	<u>Result</u>	<u>Analysis Method</u>
Specific Gravity	1.0084	
Ionic Strength	0.17 mol/L	
Total Dissolved Solids	10480 mg/L	

Cations - Analyzed By ICP

Iron	16.800 mg/L	Potassium	38.300 mg/L	Cobalt	<0.050 mg/L
Manganese	0.191 mg/L	Boron	26.300 mg/L	Chromium	<0.050 mg/L
Barium	18.600 mg/L	Lithium	3.980 mg/L	Silicon	54.900 mg/L
Strontium	12.500 mg/L	Copper	<0.050 mg/L	Aluminum	0.354 mg/L
Calcium	53.600 mg/L	Nickel	<0.100 mg/L	Molybdenum	<0.050 mg/L
Magnesium	5.440 mg/L	Zinc	0.318 mg/L	Phosphorus	2.560 mg/L
Sodium	3630.00 mg/L	Lead	<0.200 mg/L	Measured Sodium	3630.000 mg/L

Anions - Analyzed By IC

Fluoride	<2.550 mg/L	Bromide	37.585 mg/L
Chloride	4984.292 mg/L	Sulfate	8.012 mg/L

Scale Type

<u>Anhydrite CaSO4 PTB</u>	<u>N/A</u>	<u>Anhydrite CaSO4 SI</u>	<u>-4.21</u>
<u>Barite BaSO4 PTB</u>	<u>4.8</u>	<u>Barite BaSO4 SI</u>	<u>0.80</u>
<u>Calcite CaCO3 PTB</u>	<u>N/A</u>	<u>Calcite CaCO3 SI</u>	<u>-0.55</u>
<u>Celestite SrSO4 PTB</u>	<u>N/A</u>	<u>Celestite SrSO4 SI</u>	<u>-2.38</u>
<u>Gypsum CaSO4 PTB</u>	<u>N/A</u>	<u>Gypsum CaSO4 SI</u>	<u>-3.82</u>
<u>Hemihydrate CaSO4 PTB</u>	<u>N/A</u>	<u>Hemihydrate CaSO4 SI</u>	<u>-3.62</u>

Comments

Outlet

Scaling predictions calculated using Oddo-Tomson model

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