VIA ELECTRONIC MAIL –

March 10, 2021

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

Subject: **Report of Work Completed**
Dumpline Release
J17E
Mamm Creek Field
Garfield County, Colorado

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Oil and Gas, LLC (Caerus), conducted pothole delineation soil sampling, excavation oversight, stockpile soil sampling, and right-of-way (ROW) corridor soil screening at the J17E (Facility ID: 334782) pad location (Site). These activities were completed in response to the soil analytical results from the initial point of release (POR) sample in exceedance of the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 Concentration Levels for total petroleum hydrocarbons (TPH), benzene toluene, and total xylenes. The Site is located in Caerus Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

SOIL SAMPLING ACTIVITIES

From February 4 through 9, 2021, WSP personnel completed pothole soil sampling activities associated with the hydrocarbon impacts observed from the initial POR sample collected at the Site. Using an excavator operated by Western Slope Oilfield Services, Inc. (WCO), five potholes were advanced to a depth of 31 feet below ground surface (bgs). In order to delineate the vertical and lateral extent, these potholes were advanced on the outside edge of the previously removed secondary containment ring. Two soil samples were collected from each pothole location: one observed to be the most impacted based on field screening techniques and one from the terminus of the pothole. The soil sampling and screening activities were conducted by a WSP geologist who inspected each soil sample for the presence or absence of petroleum hydrocarbons odor and/or staining. The soil was characterized by visually inspecting the soil samples and field screening the soil head space using a photo-ionization detector (PID) to monitor for the presence and or absence of volatile organic compounds. All soil samples were collected in clean laboratory prepared containers and submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis of constituents listed in COGCC Table 915-1 for Protection of Groundwater Soil Screening Level Concentrations milligrams per kilogram (mg/kg) Risk Based (R) and Maximum Concentration Level (MCL) Based (M). The laboratory analytical reports are provided as Enclosure A. The enclosed Site Map illustrates the pothole soil sample locations (Figure 2).

From February 9 through 12, 2021, WCO personnel, contracted by Caerus removed clean overburden and hydrocarbon impacted soil based on visual and olfactory inspection of the soil. Soil believe to be impacted was stockpiled in a separate location than the clean soil. A total of 774 cubic yards was transported to Green Leaf Environmental Services (GLES) for offsite disposal. Additionally, an estimated 1,088 cubic yards of impacted soil was stockpiled onsite. An estimated 1,862 cubic yards of impacted soil was removed from beneath the former tank battery location. No confirmation soil samples were collected as the excavation floor and walls were not defined. Excavation activities ceased on February 12, 2021, for further evaluation of remedial options and delineation of observed impact. Waste manifests of the impacted soil transported offsite to GLES are included as Enclosure B.

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On February 19, 2021, WSP returned to the Site to collect confirmation soil samples of the excavated soil stockpiled onsite and screening of the dumpline ROW corridor behind the separators. Five five-point composite soil samples were collected from the stockpiled soil using an excavator operated by WCO personnel to ensure representative aliquots samples were collected. Each aliquot was collected at depth of approximately half of the thickness of the stockpile at each sample location. All soil samples were collected in clean laboratory prepared containers and submitted to Pace of Mount Juliet, Tennessee for analysis of constituents listed in COGCC Table 915-1 as described above. The excavation stockpile spoil areas along with the ROW corridor soil screening locations are depicted on the enclosed Figure 2.

Soil within the ROW corridor immediately south of the separators was screened using a PID to determine if hydrocarbon impacts were present. A total of three locations were screened every 20 lateral feet within the existing ROW. The PID values within the ROW ranged from 0.1 parts per million (ppm) in RIGHT-OF-WAY(East) to 0.5 ppm in RIGHT-OF-WAY(West). No soil samples from the ROW were submitted. Additionally, no soil samples were submitted from the ROW corridor (determined to be abandoned to the west), due to the corridor being removed during excavation activities. The ROW corridor immediately south of the separators will not be abandoned and will be used as part of the new ROW corridor. The ROW corridor screening locations are depicted on the enclosed Figure 2. The ROW corridor screening values are summarized in the attached Table 1.

ANALYTICAL RESULTS

Laboratory analytical results of the 10 pothole soil samples collected indicate exceedances for Table 915-1 Concentration Levels for Protection of Groundwater Soil Screening Level Concentrations (R) and (M) based for either arsenic, barium, cadmium, nickel, selenium, benzene, toluene, ethylbenzene, total xylenes, 1,2,4,-trimethylbenzene, 1,3,5,-trimethylbenzene, indeno(1,2,3,c-d)pyrene, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. All 10 samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for arsenic with concentrations ranging from 7.08 mg/kg in soil sample 20210204-J17E(CENTER)@17' to 22.4 mg/kg in soil sample 20210209-J17E(WEST)@11'. All 10 samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for barium with concentrations ranging from 155 mg/kg in soil samples 20210204-J17E(CENTER)@17' and 20210209-J17E(NORTH)@9’ to 248 mg/kg in soil sample 20210209-J17E(NORTH)@31’. Five of the 10 pothole samples collected exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for cadmium with concentrations ranging from 0.423 mg/kg in soil sample 20210205-J17E (SOUTH)@31’ to 0.517 mg/kg in soil sample 20210209-J17E(WEST)@31’. Soil sample 20210209-J17E(WEST)@11’exceeds the COGCC Table 915-1 (R) based Soil Screening Concentration Level for nickel with a centration of 31.5 mg/kg. Three of the 10 pothole soil samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for selenium with concentrations ranging from 1.04 mg/kg in soil sample 20210209-J17E(NORTH)@31’ to 2.15 mg/kg in soil sample (20210209-J17E(WEST)@31’.

Five of the 10 pothole soil samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for benzene with concentrations of 0.0100 mg/kg in soil sample 20210209-J17E(WEST)@11' to 3.37 mg/kg in soil sample 20210205-J17E(SOUTH)@31. Three of the 10 pothole soil samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for toluene with concentrations ranging from 14.0 mg/kg in soil sample 20210204-J17E(SOUTH)@9’ to 81.1 mg/kg in soil sample 20210205-J17E(SOUTH)@31’. Four of the 10 pothole soil samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for ethylbenzene with concentrations ranging from 2.33 mg/kg in soil sample 20210209-J17E(WEST)@11’ to 20.3 mg/kg in soil sample 20210204-J17E(SOUTH)@31’. Five of the 10 pothole soil samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for total xylenes with concentrations ranging from 12.2 mg/kg in soil sample 20210208-J17E(EAST)@5’ to 262 mg/kg in soil sample 20210205-J17E(SOUTH)@31’. Seven of the pothole soil samples exceed the COGCC Table 915-1 (R) based Soil Screening Concentration Level for 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene with concentrations of 1,2,4-trimethylbenzene ranging from 0.0723 mg/kg in soil sample 20210205-J17E(CENTER)@31' to 47.0 mg/kg in soil sample 20210205-J17E(SOUTH)@31’. 1,3,5-trimethylbenzene concentrations ranged from 0.577 mg/kg in soil sample 20210205-J17E(CENTER)@31' to 35.8 mg/kg in soil sample 20210205-J17E(SOUTH)@31’. Lastly, six of the 10 pothole soil samples exceed the COGCC Table 915-1 (R) based Soil Screening Concentration Level for 1-mehtylnapthalene, 2- methylnaphthalene, and

naphthalene with 1-mehtylnapthalene concentrations ranging from 0.145 mg/kg in soil sample 20210209-J17E(NORTH)@9’ to 3.46 mg/kg in soil sample 20210209-J17E(WEST)@11’. 2- methylnaphthalene concentrations ranged from 0.279 mg/kg in soil sample 20210209-J17E(NORTH)@9’ to 5.15 mg/kg in soil sample 20210209-J17E(WEST)@11’. Naphthalene concentrations ranged from 0.127 mg/kg in soil sample 20210209-J17E(NORTH)@9’ to 2.59 mg/kg in soil sample 20210209-J17E(WEST)@11’.

Laboratory analytical results of pothole soil samples which exceed the COGCC Table 915-1 Concentration Levels are pH, sodium adsorption ratio (SAR), and TPH. All pH values exceed the COGCC Table 915-1 Concentration Level except for soil sample 20210209-J17E(NORTH)@31’. All SAR values were within COGCC Table 915-1 Concentration Level except for soil sample 20210208-J17E(EAST)@31’ with a value of 38.3. Six of the 10 pothole soil samples exceed the COGCC Table 915-1 Concentration Level for TPH with concentrations ranging from 688.5 mg/kg in soil sample 20210205-J17E(CENTER)@31' to 6,237.7 mg/kg in soil sample 20210204-J17E(CENTER)@17'**.** All laboratory analytical results are included as Enclosure A and summarized in Table 2.

Laboratory analytical results of all stockpile soil samples are in exceedances for Table 915-1 Concentration Levels for Protection of Groundwater Soil Screening Level Concentrations for (R) and (M) based for either arsenic, barium, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-mehtylnapthalene, 2- methylnaphthalene, and naphthalene. Arsenic concentrations range from 7.75 mg/kg in soil sample 20210219-J17E(STK 5) to 10.0 mg/kg in soil sample 20210219-J17E(STK 1). Barium concentrations ranged from 739 mg/kg in soil sample 20210219-J17E(STK 5) to 252 mg/kg in soil sample 20210219-J17E(STK 3). 1,2,4-trimethylbenzene concentrations ranged from 2.26 mg/kg in 20210219-J17E(STK 3) to 4.68 mg/kg in soil sample 20210219-J17E(STK 5). 1,3,5 trimethylbenzene concentrations ranged from 2.96 mg/kg in soil sample 20210219-J17E(STK 4) to 4.84 mg/kg in soil sample 20210219-J17E(STK 5). 1-mehtylnapthalene concentrations ranged from 0.263 mg/kg in soil sample 20210219-J17E(STK 3) to 0.650 mg/kg in soil sample 20210219-J17E(STK 2). 2- methylnaphthalene concentrations ranged from 0.463 mg/kg in soil sample 20210219-J17E(STK 3) to 1.40 mg/kg in soil sample 20210219-J17E(STK 2). Naphthalene concentrations ranged from 0.108 mg/kg in soil sample 20210219-J17E(STK 4) to 0.475 mg/kg in soil sample 20210219-
J17E(STK 2).

Laboratory result of the stockpile soil samples are in exceedance of COGCC Table 915-1 Concentration Levels are pH, SAR, and TPH. pH values range from 8.46 in soil sample 20210219-J17E(STK 1) to 9.47 in soil sample 20210219-J17E(STK 5). SAR values range from 6.12 in soil sample 20210219-J17E(STK 5) to 6.90 in 20210219-J17E(STK 2). Four of the five stockpile soil samples exceeded the COGCC Table 915-1 Concentration Level for TPH with concentrations ranging from 703.5 mg/kg in soil sample 20210219-J17E(STK 4) to 1,001.8 mg/kg in soil sample 20210219-J17E(STK 5).

Lastly, stockpile soil sample 20210219-J17E(STK 5) exceeded the COGCC Table 915-1 (M) based Soil Screening Concentration Level for total xylenes with a concentration of 11.7 mg/kg. All laboratory analytical results are included as Enclosure A and summarized in Table 2.

Please contact us at (970) 618-4514 or (303) 548-5097 if you have any questions regarding this report of require additional information.

Kind regards,

Dustin Held
Consultant, Environmental Geologist

Rob Rebel, P.E.
Technical Principal, Environmental Engineer

Encl.

FIGURES

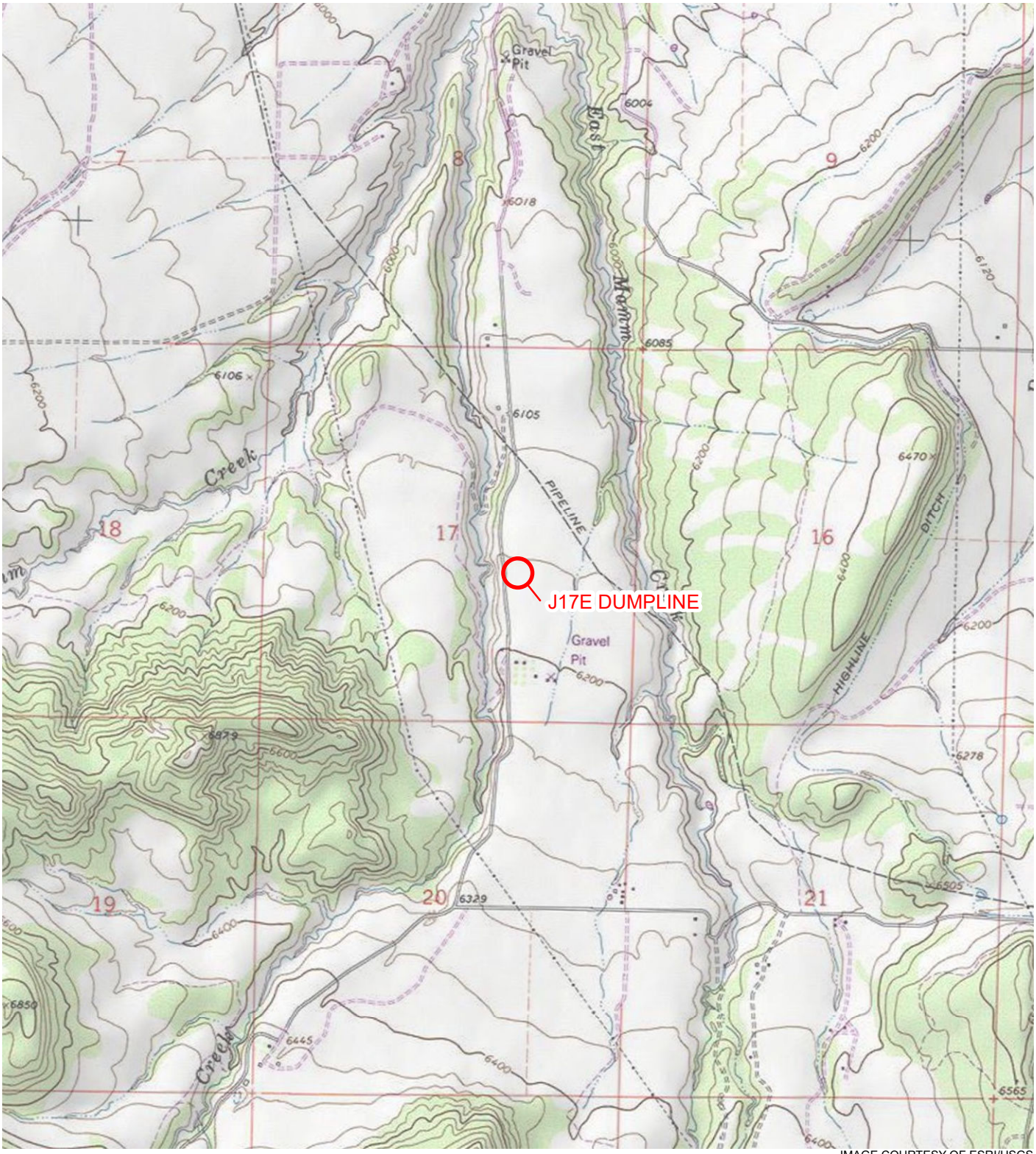

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

COLORADO

FIGURE 1
SITE LOCATION MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

wsp

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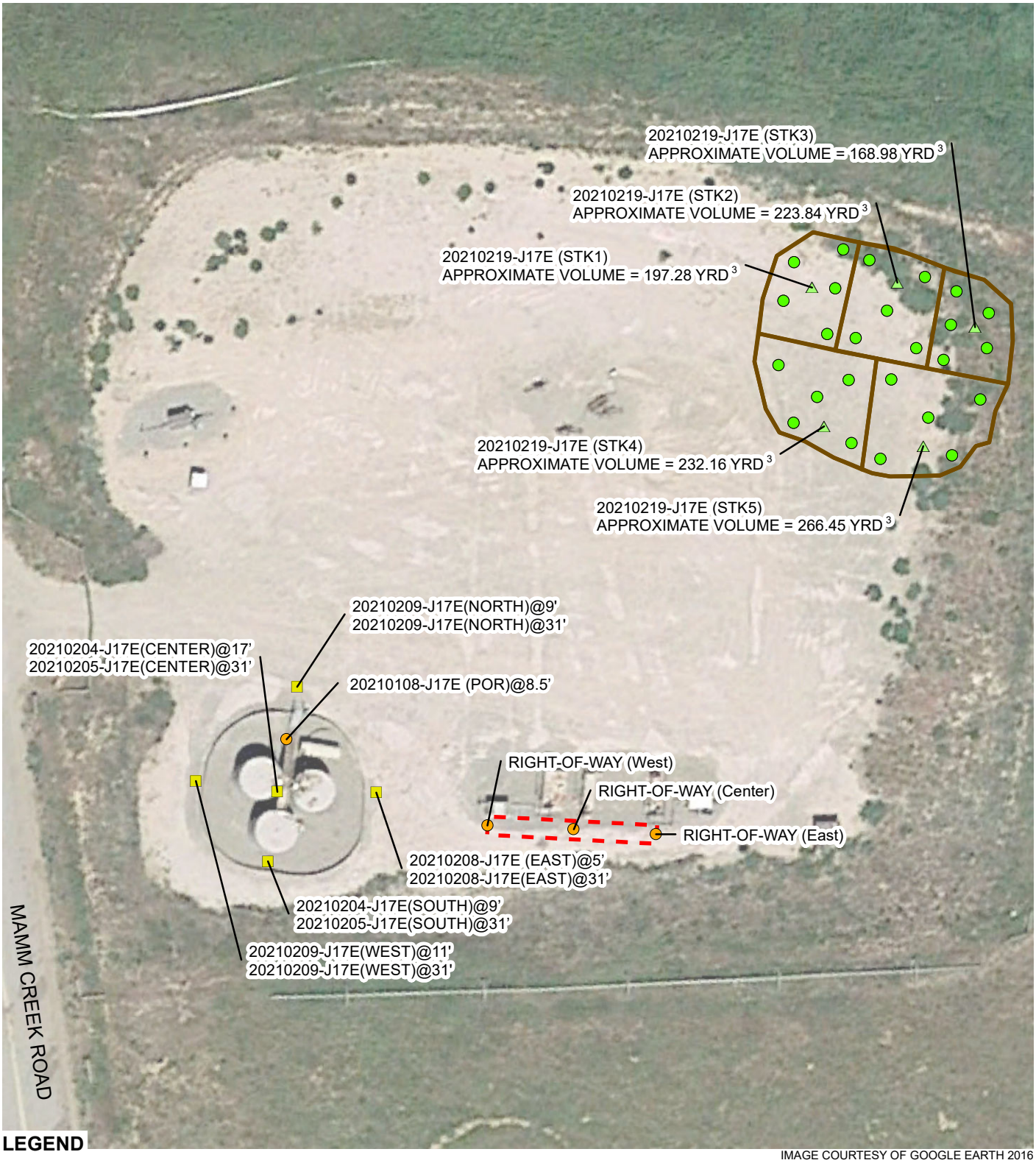

IMAGE COURTESY OF GOOGLE EARTH 2016

LEGEND

- ALIQUOT SOIL SAMPLE
- COMPOSITE SOIL SAMPLE
- SOIL SAMPLE
- POTHOLE
- STOCKPILE
- EXCAVATION EXTENT

0 40 80
Feet

N

FIGURE 2
POTHOLE SAMPLE LOCATIONS
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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TABLES

TABLE 1

RIGH OF WAY SOIL SCREENING RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

Sample ID	PID (ppm)
RIGHT-OF-WAY(West)	0.5
RIGHT-OF-WAY(Center)	0.3
RIGHT-OF-WAY(East)	0.1

Notes:
PID - photo-ionization detector
ppm - parts per million

TABLE 2

SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	CONFIRMATION SOIL SAMPLES							
			20210204-J17E (CENTER)@17'	20210205-J17E (CENTER)@31'	20210204-J17E (SOUTH)@9'	20210205-J17E (SOUTH)@31'	20210208-J17E(EAST)@5'	20210208-J17E(EAST)@31'	20210209-J17E(WEST)@11'	20210209-J17E(WEST)@31'
Sample Date			2/4/2021	2/5/2021	2/4/2021	2/5/2021	2/8/2021	2/8/2021	2/9/2021	2/9/2021
Sample Depth (feet)			17	31	9	31	5	31	11	31
Sample Type			Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.29 (M)	mg/kg	**7.08**	**13.8**	**7.78**	**8.88**	**10.5**	**7.61**	**22.4**	**12.0**
Barium	82 (M)	mg/kg	**155**	**172**	**193**	**193**	**163**	**169**	**246**	**149**
Boron	2	mg/l	0.159	0.163	0.130	0.166	ND	0.367	0.119	0.148
Cadmium	0.38 (M)	mg/kg	**0.439**	**0.498**	0.374	**0.423**	ND	ND	0.373	**0.517**
Chromium (VI)	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Copper	46 (M)	mg/kg	10.3	14.1	11.0	12.6	10.0	11.3	21.0	14.5
Lead	14 (M)	mg/kg	8.35	9.37	7.73	10.5	7.22	8.19	9.62	9.64
Nickel	26 (R)	mg/kg	13.2	13.4	12.6	15.9	12.2	15.1	**31.5**	17.0
Selenium	0.26 (M)	mg/kg	ND	ND	ND	ND	ND	ND	**1.20**	**2.15**
Silver	0.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	370 (R)	mg/kg	34.8	34.5	30.0	38.8	27.0	39.3	52.9	43.9
EC	<4	mmhos/cm	0.367	0.585	0.371	0.536	0.665	0.833	0.304	0.248
pH	6 - 8.3	SU	**8.94**	**8.42**	**9.10**	**8.85**	**8.59**	**9.75**	**9.37**	**8.81**
SAR	<6	unitless	4.00	2.45	3.51	1.51	5.00	**38.3**	5.11	1.57
TPH-GRO		mg/kg	5,590	60.5	1,990	4,050	415	1.12	728	0.0653
TPH-DRO		mg/kg	548	516	1,400	7.64	525	ND	1,530	4.26
TPH-ORO		mg/kg	99.7	112.0	90.9	38.0	108	11.5	3,710	25.2
TPH	500	mg/kg	**6,237.7**	**688.5**	**3,480.9**	**4,095.64**	**1,048**	12.62	**5,968**	29.525
Benzene	0.0026 (M)	mg/kg	**1.78**	**0.00314**	**0.541**	**3.37**	ND	ND	**0.0100**	ND
Toluene	0.69 (M)	mg/kg	**52.4**	0.00568	**14.0**	**81.1**	0.211	ND	ND	ND
Ethylbenzene	0.78 (M)	mg/kg	**10.6**	0.0114	**3.05**	**20.3**	0.546	ND	**2.33**	ND
Total Xylenes	9.9 (M)	mg/kg	**180**	0.260	**53.6**	**262**	**12.2**	ND	**42.5**	0.00378
1,2,4-trimethylbenzene	0.0081 (R)	mg/kg	**25.9**	**0.0723**	**9.62**	**47.0**	**5.19**	ND	**23.9**	0.00295
1,3,5-trimethylbenzene	0.0087 (R)	mg/kg	**27.7**	**0.0577**	**10.3**	**35.8**	**4.06**	ND	**21.3**	0.00338
Anthracene	5.8 (R)	mg/kg	0.0229	0.0175	0.0430	ND	ND	ND	0.212	ND
Acenaphthene	0.55 (R)	mg/kg	0.0234	0.0162	0.0241	ND	0.0112	ND	0.144	ND
Benzo(A)anthracene	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND	0.00347	ND
Benzo(B)fluoranthene	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND	0.00908	ND
Benzo(K)fluoranthene	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	9 (R)	mg/kg	0.00282	ND	0.00451	ND	ND	ND	0.0231	ND
Dibenzo(A,H)anthracene	0.11 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.096 (R)	mg/kg	0.00394	0.00288	0.00684	ND	ND	ND	0.0369	ND
Fluorene	0.54 (R)	mg/kg	0.0693	0.0508	0.0989	ND	0.0282	ND	**0.648**	ND
Indeno(1,2,3,c-d)pyrene	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	0.006 (R)	mg/kg	**0.897**	**0.561**	**0.770**	0.00608	**0.275**	ND	**3.46**	ND
2-methylnaphthalene	0.019 (R)	mg/kg	**2.32**	**1.40**	**1.79**	0.0136	**0.719**	ND	**5.15**	ND
Naphthalene	0.0038 (R)	mg/kg	**1.22**	**0.647**	**0.706**	0.00418	**0.269**	ND	**2.59**	ND
Pyrene	1.3 (R)	mg/kg	0.00465	0.00282	0.00410	ND	ND	ND	0.0213	ND

NOTES:
ND - less than the stated reporting limit
BOLD - indicates result exceeds the COGCC concentration leve
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/kg - milligrams per kilogran
mmhos/cm - millimhos per centimete
SAR - sodium adsorption ratio
SU - standard unit
TPH-ORO - total petroleum hydrcarbons- oil range orgainc
TPH-GRO - total petroleum hydrocarbons-gasoline range organic
TPH-DRO - total petroleum hydrocarbons-diesel range organic
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 2

SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	CONFIRMATION SOIL SAMPLES		STOCKPILE CONFIRMATION SOIL SAMPLES				
			20210209-J17E(NORTH)@9'	20210209-J17E(NORTH)@31'	20210219-J17E(STK 1)	20210219-J17E(STK 2)	20210219-J17E(STK 3)	20210219-J17E(STK 4)	20210219-J17E(STK 5)
Sample Date			2/9/2021	2/9/2021	2/19/2021	2/19/2021	2/19/2021	2/19/2021	2/19/2021
Sample Depth (feet)			9	31	NA	NA	NA	NA	NA
Sample Type			Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.29 (M)	mg/kg	**7.66**	**13.7**	**10.0**	**10.1**	**9.46**	**8.93**	**7.75**
Barium	82 (M)	mg/kg	**155**	**248**	**328**	**346**	**252**	**349**	**739**
Boron	2	mg/l	0.190	0.189	ND	0.223	0.216	0.217	0.207
Cadmium	0.38 (M)	mg/kg	0.292	0.359	ND	ND	ND	ND	ND
Chromium (VI)	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	46 (M)	mg/kg	11.0	17.2	13.7	12.7	7.95	14.2	11.9
Lead	14 (M)	mg/kg	8.71	6.81	8.58	10.7	8.10	12.4	8.24
Nickel	26 (R)	mg/kg	15.7	16.3	14.2	13.4	9.02	13.1	12.3
Selenium	0.26 (M)	mg/kg	ND	**1.04**	ND	ND	ND	ND	ND
Silver	0.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Zinc	370 (R)	mg/kg	36.1	40.2	33.7	32.8	20.8	32.8	30.8
EC	<4	mmhos/cm	0.401	0.250	0.626	0.548	0.455	0.441	0.482
pH	6 - 8.3	SU	**8.57**	7.65	**8.46**	**9.13**	**9.19**	**9.27**	**9.47**
SAR	<6	unitless	2.03	1.05	**6.66**	**6.90**	**6.69**	**6.51**	**6.12**
TPH-GRO		mg/kg	8.92	1.89	347	382	263	399	594
TPH-DRO		mg/kg	216	4.45	461	405	168	261	319
TPH-ORO		mg/kg	86.6	23.4	97.4	111	45.9	43.5	88.8
TPH	500	mg/kg	311.52	29.74	**905.4**	**898**	476.9	**703.5**	**1,001.8**
Benzene	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	0.0144
Toluene	0.69 (M)	mg/kg	ND	ND	0.459	ND	ND	ND	0.492
Ethylbenzene	0.78 (M)	mg/kg	ND	ND	0.155	ND	ND	ND	ND
Total Xylenes	9.9 (M)	mg/kg	0.379	0.00173	7.46	7.94	3.51	5.05	**11.7**
1,2,4-trimethylbenzene	0.0081 (R)	mg/kg	**0.287**	ND	**3.21**	**3.07**	**2.26**	**2.34**	**4.68**
1,3,5-trimethylbenzene	0.0087 (R)	mg/kg	**0.522**	ND	**3.25**	**3.28**	**3.30**	**2.96**	**4.84**
Anthracene	5.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	0.55 (R)	mg/kg	ND	ND	0.0319	0.0312	0.0161	0.0244	0.0162
Benzo(A)anthracene	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Chrysene	9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.096 (R)	mg/kg	ND	ND	0.00635	0.00650	ND	ND	ND
Fluorene	0.54 (R)	mg/kg	0.0296	ND	0.0913	0.0893	0.0437	0.0627	0.0546
Indeno(1,2,3,c-d)pyrene	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	0.006 (R)	mg/kg	**0.145**	ND	**0.642**	**0.650**	**0.263**	**0.367**	**0.325**
2-methylnaphthalene	0.019 (R)	mg/kg	**0.279**	ND	**1.37**	**1.40**	**0.463**	**0.534**	**0.704**
Naphthalene	0.0038 (R)	mg/kg	**0.127**	ND	**0.463**	**0.475**	**0.124**	**0.108**	**0.241**
Pyrene	1.3 (R)	mg/kg	ND	ND	0.00600	0.00602	ND	ND	ND

NOTES:
ND - less than the stated reporting limit
BOLD - indicates result exceeds the COGCC concentration leve
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/kg - milligrams per kilogran
mmhos/cm - millimhos per centimete
SAR - sodium adsorption ratio
SU - standard unit
TPH-ORO - total petroleum hydrcarbons- oil range orgainc
TPH-GRO - total petroleum hydrocarbons-gasoline range organic
TPH-DRO - total petroleum hydrocarbons-diesel range organic
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 – LABATORY ANYALYTICAL REPORTS

ANALYTICAL REPORT

February 09, 2021

Revised Report

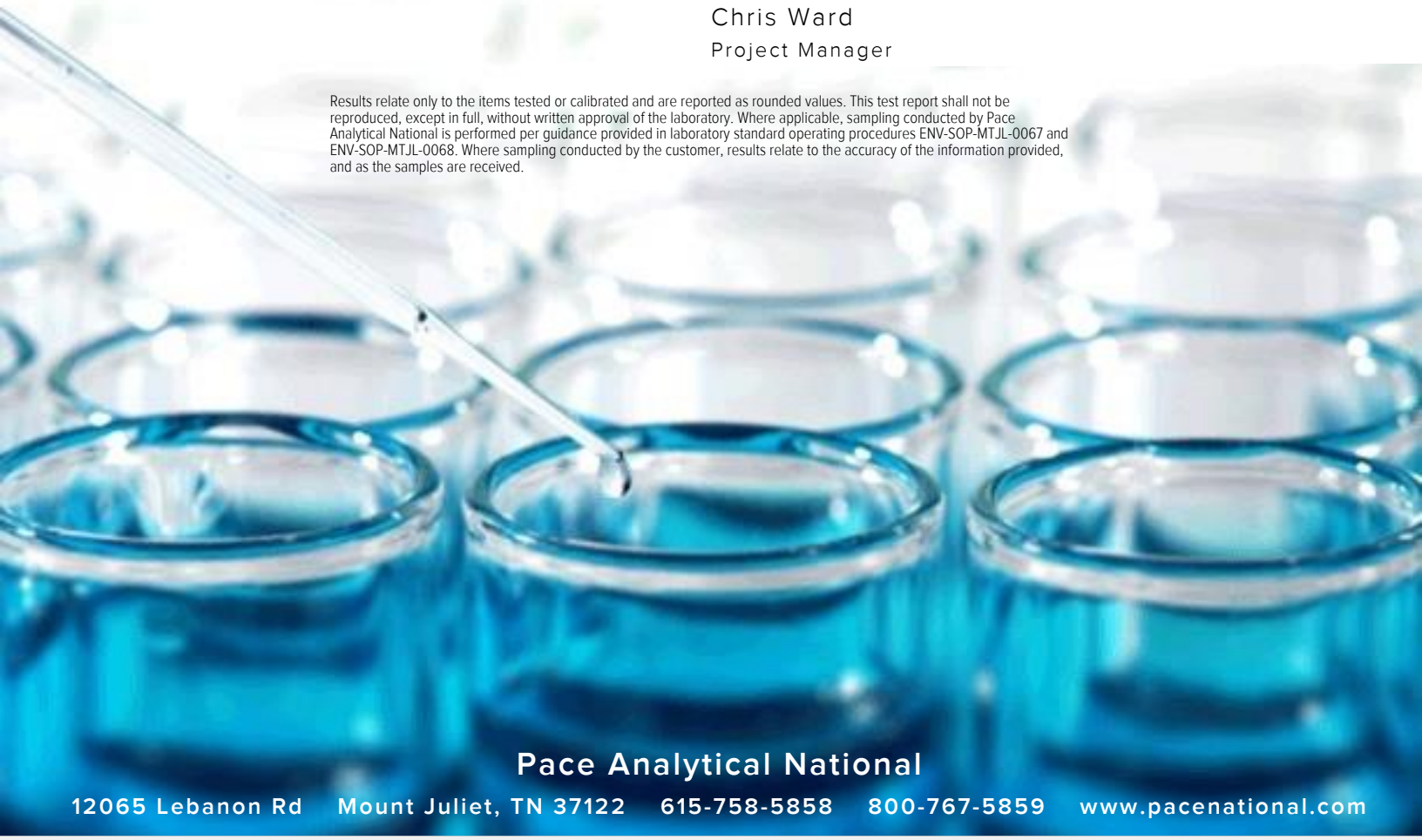
Caerus Oil and Gas

Sample Delivery Group:	L1314607
Samples Received:	02/06/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward

Project Manager



Pace Analytical National

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

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20210204-J17E (CENTER) @ 17' L1314607-01 Solid

Collected by: Evan Mason
Collected date/time: 02/04/21 09:30
Received date/time: 02/06/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1617801	1	02/09/21 08:43	02/09/21 08:43	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1616050	1	02/08/21 23:18	02/09/21 12:46	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1617808	1	02/08/21 12:45	02/08/21 17:00	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1617995	1	02/08/21 11:03	02/08/21 14:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1616943	1	02/06/21 19:07	02/07/21 14:45	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1618492	1	02/09/21 09:26	02/09/21 11:33	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1616946	5	02/06/21 19:15	02/06/21 22:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1617634	5000	02/06/21 11:53	02/07/21 13:52	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1617576	80	02/06/21 11:53	02/06/21 23:32	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	1	02/08/21 09:45	02/08/21 14:56	CAG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	5	02/08/21 09:45	02/09/21 07:29	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1617781	1	02/08/21 06:55	02/08/21 15:10	LEA	Mt. Juliet, TN

20210204-J17E (SOUTH) @ 9' L1314607-02 Solid

Collected by: Evan Mason
Collected date/time: 02/04/21 10:50
Received date/time: 02/06/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1617801	1	02/09/21 08:46	02/09/21 08:46	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1616050	1	02/08/21 23:18	02/09/21 12:53	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1617808	1	02/08/21 12:45	02/08/21 17:00	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1617995	1	02/08/21 11:03	02/08/21 14:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1616943	1	02/06/21 19:07	02/07/21 14:48	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1618492	1	02/09/21 09:26	02/09/21 11:36	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1616946	5	02/06/21 19:15	02/06/21 22:54	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1617634	1000	02/06/21 11:53	02/07/21 13:31	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1617576	40	02/06/21 11:53	02/06/21 23:51	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	1	02/08/21 09:45	02/08/21 15:35	CAG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	5	02/08/21 09:45	02/09/21 10:52	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1617781	1	02/08/21 06:55	02/08/21 15:29	LEA	Mt. Juliet, TN

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

Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 02/09/21 16:28

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.00		1	02/09/2021 08:43	WG1617801

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/09/2021 12:46	WG1616050

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.94	T8	1	02/08/2021 17:00	WG1617808

Sample Narrative:

L1314607-01 WG1617808: 8.94 at 20.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	367		10.0	1	02/08/2021 14:02	WG1617995

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	155		0.0852	0.500	1	02/07/2021 14:45	WG1616943
Cadmium	0.439	J	0.0471	0.500	1	02/07/2021 14:45	WG1616943
Copper	10.3		0.400	2.00	1	02/07/2021 14:45	WG1616943
Lead	8.35		0.208	0.500	1	02/07/2021 14:45	WG1616943
Nickel	13.2		0.132	2.00	1	02/07/2021 14:45	WG1616943
Selenium	U		0.764	2.00	1	02/07/2021 14:45	WG1616943
Silver	U		0.127	1.00	1	02/07/2021 14:45	WG1616943
Zinc	34.8		0.832	5.00	1	02/07/2021 14:45	WG1616943

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Boron	0.159	J	0.0167	0.200	1	02/09/2021 11:33	WG1618492

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.08		0.100	1.00	5	02/06/2021 22:51	WG1616946

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	5590		109	500	5000	02/07/2021 13:52	WG1617634
(S) a,a,a-Trifluorotoluene(FID)	*97.3*			*77.0-120*		*02/07/2021 13:52*	WG1617634

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	1.78		0.0374	0.0800	80	02/06/2021 23:32	WG1617576
Ethylbenzene	10.6		0.0590	0.200	80	02/06/2021 23:32	WG1617576
Toluene	52.4		0.104	0.400	80	02/06/2021 23:32	WG1617576
1,2,4-Trimethylbenzene	25.9		0.126	0.400	80	02/06/2021 23:32	WG1617576
1,3,5-Trimethylbenzene	27.7		0.160	0.400	80	02/06/2021 23:32	WG1617576
Xylenes, Total	180		0.0704	0.520	80	02/06/2021 23:32	WG1617576
(S) Toluene-d8	*95.6*			*75.0-131*		*02/06/2021 23:32*	WG1617576
(S) 4-Bromofluorobenzene	*101*			*67.0-138*		*02/06/2021 23:32*	WG1617576
(S) 1,2-Dichloroethane-d4	*98.9*			*70.0-130*		*02/06/2021 23:32*	WG1617576

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	548	V	8.05	20.0	5	02/09/2021 07:29	WG1617670
C28-C36 Motor Oil Range	99.7		0.274	4.00	1	02/08/2021 14:56	WG1617670
(S) o-Terphenyl	*84.8*			*18.0-148*		*02/09/2021 07:29*	WG1617670
(S) o-Terphenyl	*120*			*18.0-148*		*02/08/2021 14:56*	WG1617670

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0229		0.00230	0.00600	1	02/08/2021 15:10	WG1617781
Acenaphthene	0.0234		0.00209	0.00600	1	02/08/2021 15:10	WG1617781
Acenaphthylene	0.00484	J	0.00216	0.00600	1	02/08/2021 15:10	WG1617781
Benzo(a)anthracene	U		0.00173	0.00600	1	02/08/2021 15:10	WG1617781
Benzo(a)pyrene	U		0.00179	0.00600	1	02/08/2021 15:10	WG1617781
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/08/2021 15:10	WG1617781
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/08/2021 15:10	WG1617781
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/08/2021 15:10	WG1617781
Chrysene	0.00282	J	0.00232	0.00600	1	02/08/2021 15:10	WG1617781
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/08/2021 15:10	WG1617781
Fluoranthene	0.00394	J	0.00227	0.00600	1	02/08/2021 15:10	WG1617781
Fluorene	0.0693		0.00205	0.00600	1	02/08/2021 15:10	WG1617781
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/08/2021 15:10	WG1617781
Naphthalene	1.22		0.00408	0.0200	1	02/08/2021 15:10	WG1617781
Phenanthrene	0.0926		0.00231	0.00600	1	02/08/2021 15:10	WG1617781
Pyrene	0.00465	J	0.00200	0.00600	1	02/08/2021 15:10	WG1617781
1-Methylnaphthalene	0.897		0.00449	0.0200	1	02/08/2021 15:10	WG1617781
2-Methylnaphthalene	2.32		0.00427	0.0200	1	02/08/2021 15:10	WG1617781
2-Chloronaphthalene	U		0.00466	0.0200	1	02/08/2021 15:10	WG1617781
(S) p-Terphenyl-d14	*86.7*			*23.0-120*		*02/08/2021 15:10*	WG1617781
(S) Nitrobenzene-d5	*706*	J1		*14.0-149*		*02/08/2021 15:10*	WG1617781
(S) 2-Fluorobiphenyl	*60.1*			*34.0-125*		*02/08/2021 15:10*	WG1617781

Sample Narrative:

L1314607-01 WG1617781: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.51		1	02/09/2021 08:46	WG1617801

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/09/2021 12:53	WG1616050

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.10	T8	1	02/08/2021 17:00	WG1617808

Sample Narrative:

L1314607-02 WG1617808: 9.1 at 20.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	371		10.0	1	02/08/2021 14:02	WG1617995

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	193		0.0852	0.500	1	02/07/2021 14:48	WG1616943
Cadmium	0.374	J	0.0471	0.500	1	02/07/2021 14:48	WG1616943
Copper	11.0		0.400	2.00	1	02/07/2021 14:48	WG1616943
Lead	7.73		0.208	0.500	1	02/07/2021 14:48	WG1616943
Nickel	12.6		0.132	2.00	1	02/07/2021 14:48	WG1616943
Selenium	U		0.764	2.00	1	02/07/2021 14:48	WG1616943
Silver	U		0.127	1.00	1	02/07/2021 14:48	WG1616943
Zinc	30.0		0.832	5.00	1	02/07/2021 14:48	WG1616943

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Boron	0.130	J	0.0167	0.200	1	02/09/2021 11:36	WG1618492

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.78		0.100	1.00	5	02/06/2021 22:54	WG1616946

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1990		21.7	100	1000	02/07/2021 13:31	WG1617634
(S) a,a,a-Trifluorotoluene(FID)	*97.0*			*77.0-120*		*02/07/2021 13:31*	WG1617634

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.541		0.0187	0.0400	40	02/06/2021 23:51	WG1617576
Ethylbenzene	3.05		0.0295	0.100	40	02/06/2021 23:51	WG1617576
Toluene	14.0		0.0520	0.200	40	02/06/2021 23:51	WG1617576
1,2,4-Trimethylbenzene	9.62		0.0632	0.200	40	02/06/2021 23:51	WG1617576
1,3,5-Trimethylbenzene	10.3		0.0800	0.200	40	02/06/2021 23:51	WG1617576
Xylenes, Total	53.6		0.0352	0.260	40	02/06/2021 23:51	WG1617576
(S) Toluene-d8	*97.3*			*75.0-131*		*02/06/2021 23:51*	WG1617576
(S) 4-Bromofluorobenzene	*103*			*67.0-138*		*02/06/2021 23:51*	WG1617576
(S) 1,2-Dichloroethane-d4	*99.2*			*70.0-130*		*02/06/2021 23:51*	WG1617576

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1400		8.05	20.0	5	02/09/2021 10:52	WG1617670
C28-C36 Motor Oil Range	90.9		0.274	4.00	1	02/08/2021 15:35	WG1617670
(S) o-Terphenyl	*365*	J1		*18.0-148*		*02/09/2021 10:52*	WG1617670
(S) o-Terphenyl	*186*	J1		*18.0-148*		*02/08/2021 15:35*	WG1617670

Sample Narrative:

L1314607-02 WG1617670: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0430		0.00230	0.00600	1	02/08/2021 15:29	WG1617781
Acenaphthene	0.0241		0.00209	0.00600	1	02/08/2021 15:29	WG1617781
Acenaphthylene	0.00481	J	0.00216	0.00600	1	02/08/2021 15:29	WG1617781
Benzo(a)anthracene	U		0.00173	0.00600	1	02/08/2021 15:29	WG1617781
Benzo(a)pyrene	U		0.00179	0.00600	1	02/08/2021 15:29	WG1617781
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/08/2021 15:29	WG1617781
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/08/2021 15:29	WG1617781
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/08/2021 15:29	WG1617781
Chrysene	0.00451	J	0.00232	0.00600	1	02/08/2021 15:29	WG1617781
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/08/2021 15:29	WG1617781
Fluoranthene	0.00684		0.00227	0.00600	1	02/08/2021 15:29	WG1617781
Fluorene	0.0989		0.00205	0.00600	1	02/08/2021 15:29	WG1617781
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/08/2021 15:29	WG1617781
Naphthalene	0.706		0.00408	0.0200	1	02/08/2021 15:29	WG1617781
Phenanthrene	0.122		0.00231	0.00600	1	02/08/2021 15:29	WG1617781
Pyrene	0.00410	J	0.00200	0.00600	1	02/08/2021 15:29	WG1617781
1-Methylnaphthalene	0.770		0.00449	0.0200	1	02/08/2021 15:29	WG1617781
2-Methylnaphthalene	1.79		0.00427	0.0200	1	02/08/2021 15:29	WG1617781
2-Chloronaphthalene	U		0.00466	0.0200	1	02/08/2021 15:29	WG1617781
(S) p-Terphenyl-d14	*86.7*			*23.0-120*		*02/08/2021 15:29*	WG1617781
(S) Nitrobenzene-d5	*360*	J1		*14.0-149*		*02/08/2021 15:29*	WG1617781
(S) 2-Fluorobiphenyl	*56.3*			*34.0-125*		*02/08/2021 15:29*	WG1617781

Sample Narrative:

L1314607-02 WG1617781: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3620851-1 02/09/21 11:54

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

L1314613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314613-02 02/09/21 13:04 • (DUP) R3620851-3 02/09/21 13:09

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

L1312691-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1312691-01 02/09/21 15:08 • (DUP) R3620851-8 02/09/21 15:14

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

Laboratory Control Sample (LCS)

(LCS) R3620851-2 02/09/21 12:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1312691-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1312691-10 02/09/21 14:42 • (MS) R3620851-4 02/09/21 14:48 • (MSD) R3620851-5 02/09/21 14:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	19.6	19.5	97.8	97.3	1	75.0-125			0.491	20

L1312691-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1312691-10 02/09/21 14:42 • (MS) R3620851-6 02/09/21 14:58

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	1130	U	1050	93.2	50	75.0-125	

L1312804-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1312804-06 02/08/21 17:00 • (DUP) R3620505-2 02/08/21 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.19	8.13	1	0.735		1

Sample Narrative:

OS: 8.19 at 22C

DUP: 8.13 at 21.9C

L1314613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314613-02 02/08/21 17:00 • (DUP) R3620505-3 02/08/21 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.85	8.89	1	0.451		1

Sample Narrative:

OS: 8.85 at 22.9C

DUP: 8.89 at 22.3C

Laboratory Control Sample (LCS)

(LCS) R3620505-1 02/08/21 17:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 18.8C

Method Blank (MB)

(MB) R3620462-1 02/08/21 14:02

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

L1314613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314613-02 02/08/21 14:02 • (DUP) R3620462-3 02/08/21 14:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	536	535	1	0.187		20

Laboratory Control Sample (LCS)

(LCS) R3620462-2 02/08/21 14:02

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	483	479	99.2	85.0-115	

Method Blank (MB)

(MB) R3620290-1 02/07/21 13:54

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

Laboratory Control Sample (LCS)

(LCS) R3620290-2 02/07/21 13:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.8	95.8	80.0-120	
Cadmium	100	92.1	92.1	80.0-120	
Copper	100	93.3	93.3	80.0-120	
Lead	100	93.3	93.3	80.0-120	
Nickel	100	94.9	94.9	80.0-120	
Selenium	100	93.0	93.0	80.0-120	
Silver	20.0	16.7	83.7	80.0-120	
Zinc	100	92.3	92.3	80.0-120	

L1313632-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1313632-22 02/07/21 13:59 • (MS) R3620290-5 02/07/21 14:07 • (MSD) R3620290-6 02/07/21 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 %
Barium	100	16.9	122	117	105	99.9	1	75.0-125			4.07	20
Cadmium	100	0.0735	104	101	104	101	1	75.0-125			3.01	20
Copper	100	3.45	108	106	105	102	1	75.0-125			2.27	20
Lead	100	5.06	112	108	107	103	1	75.0-125			4.23	20
Nickel	100	3.13	114	111	111	108	1	75.0-125			3.05	20
Selenium	100	U	103	101	103	101	1	75.0-125			2.21	20
Silver	20.0	U	19.2	18.8	95.8	94.0	1	75.0-125			1.92	20
Zinc	100	18.5	123	116	105	97.6	1	75.0-125			5.79	20

Method Blank (MB)

(MB) R3620747-1 02/09/21 11:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Boron	U		0.0167	0.200

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

(LCS) R3620747-2 02/09/21 11:27 • (LCSD) R3620747-3 02/09/21 11:30

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 %
Boron	1.00	1.03	1.02	103	102	80.0-120			1.35	20

Method Blank (MB)

(MB) R3620239-1 02/06/21 21:52

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

Laboratory Control Sample (LCS)

(LCS) R3620239-2 02/06/21 21:55

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Arsenic	100	92.7	92.7	80.0-120	

L1313632-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1313632-22 02/06/21 21:59 • (MS) R3620239-5 02/06/21 22:08 • (MSD) R3620239-6 02/06/21 22:12

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	20.0	5.16	107	104	102	99.0	5	75.0-125			2.62	20

Method Blank (MB)

(MB) R3620344-2 02/07/21 10:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*97.3*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3620344-1 02/07/21 10:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.77	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*107*	*77.0-120*	

Method Blank (MB)

(MB) R3620204-3 02/06/21 15:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*105*			*75.0-131*
(S) 4-Bromofluorobenzene	*99.2*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*84.7*			*70.0-130*

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

(LCS) R3620204-1 02/06/21 13:59 • (LCSD) R3620204-2 02/06/21 14:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.118	0.117	94.4	93.6	70.0-123			0.851	20
Ethylbenzene	0.125	0.116	0.117	92.8	93.6	74.0-126			0.858	20
Toluene	0.125	0.116	0.117	92.8	93.6	75.0-121			0.858	20
1,2,4-Trimethylbenzene	0.125	0.104	0.101	83.2	80.8	70.0-126			2.93	20
1,3,5-Trimethylbenzene	0.125	0.109	0.105	87.2	84.0	73.0-127			3.74	20
Xylenes, Total	0.375	0.348	0.344	92.8	91.7	72.0-127			1.16	20
(S) Toluene-d8				*103*	*105*	*75.0-131*				
(S) 4-Bromofluorobenzene				*101*	*102*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*99.9*	*99.9*	*70.0-130*				

L1312035-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1312035-02 02/06/21 21:19 • (MS) R3620204-4 02/07/21 00:29 • (MSD) R3620204-5 02/07/21 00:47

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.134	0.145	107	116	1	10.0-149			7.89	37
Ethylbenzene	0.125	U	0.136	0.143	109	114	1	10.0-160			5.02	38
Toluene	0.125	U	0.143	0.147	114	118	1	10.0-156			2.76	38
1,2,4-Trimethylbenzene	0.125	U	0.126	0.131	101	105	1	10.0-160			3.89	36
1,3,5-Trimethylbenzene	0.125	U	0.136	0.140	109	112	1	10.0-160			2.90	38
Xylenes, Total	0.375	0.00215	0.401	0.417	106	111	1	10.0-160			3.91	38
(S) Toluene-d8					*102*	*101*		*75.0-131*				
(S) 4-Bromofluorobenzene					*96.1*	*98.2*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*92.0*	*98.8*		*70.0-130*				

Method Blank (MB)

(MB) R3620578-1 02/08/21 14:04

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	*76.0*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3620578-2 02/08/21 14:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.8	83.6	50.0-150	
(S) o-Terphenyl			*82.1*	*18.0-148*	

L1314607-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314607-01 02/08/21 14:56 • (MS) R3620578-3 02/08/21 15:09 • (MSD) R3620578-4 02/08/21 15:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	576	722	704	292	262	1	50.0-150	E V	E V	2.52	20
(S) o-Terphenyl					*96.5*	*92.2*		*18.0-148*				

Method Blank (MB)

(MB) R3620515-2 02/08/21 09:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*88.8*			*14.0-149*
(S) 2-Fluorobiphenyl	*80.9*			*34.0-125*
(S) p-Terphenyl-d14	*93.5*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3620515-1 02/08/21 09:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0603	75.4	50.0-126	
Acenaphthene	0.0800	0.0614	76.8	50.0-120	
Acenaphthylene	0.0800	0.0666	83.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0625	78.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0462	57.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0571	71.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0557	69.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0592	74.0	49.0-125	
Chrysene	0.0800	0.0608	76.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0585	73.1	47.0-125	
Fluoranthene	0.0800	0.0610	76.3	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3620515-1 02/08/21 09:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0652	81.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0581	72.6	46.0-125	
Naphthalene	0.0800	0.0614	76.8	50.0-120	
Phenanthrene	0.0800	0.0590	73.8	47.0-120	
Pyrene	0.0800	0.0608	76.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0636	79.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0610	76.3	50.0-120	
2-Chloronaphthalene	0.0800	0.0604	75.5	50.0-120	
(S) Nitrobenzene-d5			*90.9*	*14.0-149*	
(S) 2-Fluorobiphenyl			*76.9*	*34.0-125*	
(S) p-Terphenyl-d14			*89.7*	*23.0-120*	

L1314129-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314129-05 02/08/21 12:52 • (MS) R3620515-3 02/08/21 13:12 • (MSD) R3620515-4 02/08/21 13:32

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0776	U	0.0573	0.0545	73.8	69.9	1	10.0-145			5.01	30
Acenaphthene	0.0776	U	0.0598	0.0563	77.1	72.2	1	14.0-127			6.03	27
Acenaphthylene	0.0776	U	0.0625	0.0592	80.5	75.9	1	21.0-124			5.42	25
Benzo(a)anthracene	0.0776	U	0.0576	0.0546	74.2	70.0	1	10.0-139			5.35	30
Benzo(a)pyrene	0.0776	U	0.0563	0.0535	72.6	68.6	1	10.0-141			5.10	31
Benzo(b)fluoranthene	0.0776	U	0.0572	0.0544	73.7	69.7	1	10.0-140			5.02	36
Benzo(g,h,i)perylene	0.0776	U	0.0571	0.0540	73.6	69.2	1	10.0-140			5.58	33
Benzo(k)fluoranthene	0.0776	U	0.0577	0.0549	74.4	70.4	1	10.0-137			4.97	31
Chrysene	0.0776	U	0.0594	0.0565	76.5	72.4	1	10.0-145			5.00	30
Dibenz(a,h)anthracene	0.0776	U	0.0568	0.0542	73.2	69.5	1	10.0-132			4.68	31
Fluoranthene	0.0776	U	0.0585	0.0555	75.4	71.2	1	10.0-153			5.26	33
Fluorene	0.0776	U	0.0623	0.0592	80.3	75.9	1	11.0-130			5.10	29
Indeno(1,2,3-cd)pyrene	0.0776	U	0.0560	0.0540	72.2	69.2	1	10.0-137			3.64	32
Naphthalene	0.0776	U	0.0594	0.0566	76.5	72.6	1	10.0-135			4.83	27
Phenanthrene	0.0776	U	0.0584	0.0558	75.3	71.5	1	10.0-144			4.55	31
Pyrene	0.0776	U	0.0584	0.0565	75.3	72.4	1	10.0-148			3.31	35
1-Methylnaphthalene	0.0776	U	0.0612	0.0578	78.9	74.1	1	10.0-142			5.71	28
2-Methylnaphthalene	0.0776	U	0.0580	0.0552	74.7	70.8	1	10.0-137			4.95	28
2-Chloronaphthalene	0.0776	U	0.0590	0.0558	76.0	71.5	1	29.0-120			5.57	24
(S) Nitrobenzene-d5					*85.2*	*80.7*		*14.0-149*				
(S) 2-Fluorobiphenyl					*79.1*	*74.8*		*34.0-125*				
(S) p-Terphenyl-d14					*89.4*	*85.4*		*23.0-120*				

L1314095-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314095-01 02/08/21 16:28 • (MS) R3620515-5 02/08/21 16:48 • (MSD) R3620515-6 02/08/21 17:07

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 %
Anthracene	0.0792	0.0156	0.0506	0.0506	44.2	44.0	1	10.0-145			0.000	30
Acenaphthene	0.0792	0.0182	0.0676	0.0744	62.4	70.6	1	14.0-127			9.58	27
Acenaphthylene	0.0792	0.0526	0.0917	0.0984	49.4	57.5	1	21.0-124			7.05	25
Benzo(a)anthracene	0.0792	0.113	0.132	0.156	24.0	54.0	1	10.0-139			16.7	30
Benzo(a)pyrene	0.0792	0.0470	0.0656	0.0925	23.5	57.2	1	10.0-141		J3	34.0	31
Benzo(b)fluoranthene	0.0792	0.0766	0.0931	0.130	20.8	67.1	1	10.0-140			33.1	36
Benzo(g,h,i)perylene	0.0792	0.0194	0.0293	0.0438	12.5	30.7	1	10.0-140		J3	39.7	33
Benzo(k)fluoranthene	0.0792	0.0210	0.0458	0.0614	31.3	50.8	1	10.0-137			29.1	31
Chrysene	0.0792	0.131	0.145	0.177	17.7	57.8	1	10.0-145			19.9	30
Dibenz(a,h)anthracene	0.0792	0.0160	0.0444	0.0501	35.9	42.8	1	10.0-132			12.1	31
Fluoranthene	0.0792	0.177	0.184	0.213	8.84	45.2	1	10.0-153	J6		14.6	33
Fluorene	0.0792	0.0442	0.0877	0.0956	54.9	64.6	1	11.0-130			8.62	29
Indeno(1,2,3-cd)pyrene	0.0792	0.0349	0.0461	0.0674	14.1	40.8	1	10.0-137		J3	37.5	32
Naphthalene	0.0792	0.0745	0.119	0.119	56.2	55.9	1	10.0-135			0.000	27
Phenanthrene	0.0792	0.262	0.262	0.274	0.000	15.1	1	10.0-144	J6		4.48	31
Pyrene	0.0792	0.169	0.179	0.204	12.6	44.0	1	10.0-148			13.1	35
1-Methylnaphthalene	0.0792	0.628	0.622	0.603	0.000	0.000	1	10.0-142	V	V	3.10	28
2-Methylnaphthalene	0.0792	0.249	0.276	0.265	34.1	20.1	1	10.0-137			4.07	28
2-Chloronaphthalene	0.0792	0.0242	0.0642	0.0712	50.5	59.0	1	29.0-120			10.3	24
(S) Nitrobenzene-d5					*76.8*	*97.6*		*14.0-149*				
(S) 2-Fluorobiphenyl					*68.3*	*77.7*		*34.0-125*				
(S) p-Terphenyl-d14					*53.3*	*61.0*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
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.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* 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 National.

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	LAO00356
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		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr. Ste. C Sacramento, CA, 95811

California	2961	Oregon	CA300002
Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

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Nevada	NV009412021-1

Pace Analytical National 1606 E. Brazos Street Suite D Victoria, TX, 77901

Texas	T104704328-20-18

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

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

Billing Information: **Same as above**

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

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

Project Description: **J17E Dumpline Release**

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

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Evan Mason

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: ~~Standard TAT~~

Pres Chk

Analysis / Container /.Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR, EC, pH, Boron	TABLE 915-1- Metals	Remarks	Sample # (lab only)
20210204-J17E (center)@17'	Grab	SS	17'	2/4/21	930	2	X	X	X	X	X		-01
~~20210204-J17E (center)@19'~~ EM			19'		945	2	X	X	X	X	X		
20210204-J17E (South)@ 9'	Grab	SS	9'	2/4/21	1050	2	X	X	X	X	X		-02
~~20210204-J17E (South)@19'~~ EM			19'		1130		X	X	X	X	X		

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

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

L # 134607

Table F219

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 1676 2750 4027

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	EM 2/4/21 2/5/21	1600	
Relinquished by : (Signature)	Date: 2/5/21	Time: 1730	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Caleb Compton

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 2.6°C Bottles Received: 4
3.0+.1=3.1

If preservation required by Login: Date/Time

Date: 2/6/21 Time: 9:08

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 10, 2021

Revised Report

Caerus Oil and Gas

Sample Delivery Group:	L1314613
Samples Received:	02/06/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

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.

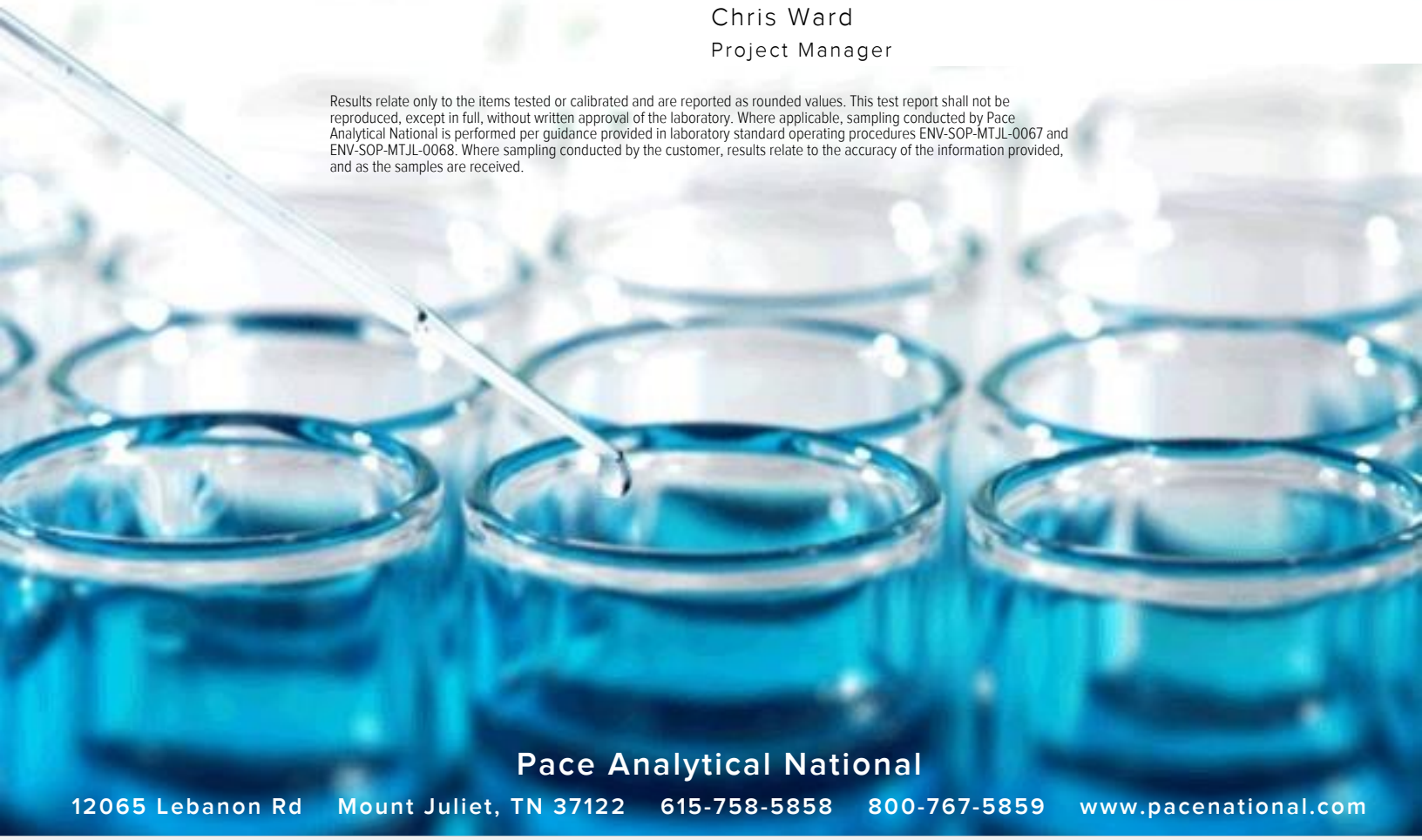

TABLE OF CONTENTS

20210205-J17E (CENTER) @ 31' L1314613-01 Solid

Collected by: Evan Mason
Collected date/time: 02/05/21 13:30
Received date/time: 02/06/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1617801	1	02/09/21 08:49	02/09/21 08:49	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1616050	1	02/08/21 23:18	02/09/21 12:59	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1617808	1	02/08/21 12:45	02/08/21 17:00	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1617995	1	02/08/21 11:03	02/08/21 14:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1616943	1	02/06/21 19:07	02/07/21 14:51	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1618492	1	02/09/21 09:26	02/09/21 11:38	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1616946	5	02/06/21 19:15	02/06/21 22:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1618033	25	02/06/21 11:53	02/08/21 19:26	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1617800	4	02/06/21 11:53	02/07/21 23:15	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	1	02/08/21 09:45	02/08/21 16:13	CAG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	5	02/08/21 09:45	02/09/21 08:01	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1617781	1	02/08/21 06:55	02/08/21 15:49	LEA	Mt. Juliet, TN

20210205-J17E (SOUTH) @ 31' L1314613-02 Solid

Collected by: Evan Mason
Collected date/time: 02/05/21 15:30
Received date/time: 02/06/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1617801	1	02/09/21 08:52	02/09/21 08:52	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1616050	1	02/08/21 23:18	02/09/21 13:04	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1617808	1	02/08/21 12:45	02/08/21 17:00	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1617995	1	02/08/21 11:03	02/08/21 14:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1616943	1	02/06/21 19:07	02/07/21 14:54	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1618492	1	02/09/21 09:26	02/09/21 11:41	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1616946	5	02/06/21 19:15	02/06/21 23:01	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1617634	500	02/06/21 11:53	02/07/21 12:50	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1617800	40	02/06/21 11:53	02/07/21 23:34	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1618167	400	02/06/21 11:53	02/08/21 15:35	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1617670	1	02/08/21 09:45	02/09/21 08:39	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1617781	1	02/08/21 06:55	02/08/21 16:09	LEA	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 02/09/21 16:25

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.45		1	02/09/2021 08:49	WG1617801

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/09/2021 12:59	WG1616050

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.42	T8	1	02/08/2021 17:00	WG1617808

Sample Narrative:

L1314613-01 WG1617808: 8.42 at 21.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	585		10.0	1	02/08/2021 14:02	WG1617995

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	172		0.0852	0.500	1	02/07/2021 14:51	WG1616943
Cadmium	0.498	J	0.0471	0.500	1	02/07/2021 14:51	WG1616943
Copper	14.1		0.400	2.00	1	02/07/2021 14:51	WG1616943
Lead	9.37		0.208	0.500	1	02/07/2021 14:51	WG1616943
Nickel	13.4		0.132	2.00	1	02/07/2021 14:51	WG1616943
Selenium	U		0.764	2.00	1	02/07/2021 14:51	WG1616943
Silver	U		0.127	1.00	1	02/07/2021 14:51	WG1616943
Zinc	34.5		0.832	5.00	1	02/07/2021 14:51	WG1616943

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Boron	0.163	J	0.0167	0.200	1	02/09/2021 11:38	WG1618492

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.8		0.100	1.00	5	02/06/2021 22:58	WG1616946

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	60.5		0.543	2.50	25	02/08/2021 19:26	WG1618033
(S) a,a,a-Trifluorotoluene(FID)	*90.7*			*77.0-120*		*02/08/2021 19:26*	WG1618033

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00314	J	0.00187	0.00400	4	02/07/2021 23:15	WG1617800
Toluene	0.00568	J	0.00520	0.0200	4	02/07/2021 23:15	WG1617800
Ethylbenzene	0.0114		0.00295	0.0100	4	02/07/2021 23:15	WG1617800
Xylenes, Total	0.260		0.00352	0.0260	4	02/07/2021 23:15	WG1617800
1,2,4-Trimethylbenzene	0.0723		0.00632	0.0200	4	02/07/2021 23:15	WG1617800
1,3,5-Trimethylbenzene	0.0577		0.00800	0.0200	4	02/07/2021 23:15	WG1617800
(S) Toluene-d8	*119*			*75.0-131*		*02/07/2021 23:15*	WG1617800
(S) 4-Bromofluorobenzene	*106*			*67.0-138*		*02/07/2021 23:15*	WG1617800
(S) 1,2-Dichloroethane-d4	*98.9*			*70.0-130*		*02/07/2021 23:15*	WG1617800

Sample Narrative:

L1314613-01 WG1617800: Non-target compounds too high to run at a lower dilution.

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	516		8.05	20.0	5	02/09/2021 08:01	WG1617670
C28-C36 Motor Oil Range	112		0.274	4.00	1	02/08/2021 16:13	WG1617670
(S) o-Terphenyl	*79.1*			*18.0-148*		*02/08/2021 16:13*	WG1617670
(S) o-Terphenyl	*49.8*			*18.0-148*		*02/09/2021 08:01*	WG1617670

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0175		0.00230	0.00600	1	02/08/2021 15:49	WG1617781
Acenaphthene	0.0162		0.00209	0.00600	1	02/08/2021 15:49	WG1617781
Acenaphthylene	0.00365	J	0.00216	0.00600	1	02/08/2021 15:49	WG1617781
Benzo(a)anthracene	U		0.00173	0.00600	1	02/08/2021 15:49	WG1617781
Benzo(a)pyrene	U		0.00179	0.00600	1	02/08/2021 15:49	WG1617781
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/08/2021 15:49	WG1617781
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/08/2021 15:49	WG1617781
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/08/2021 15:49	WG1617781
Chrysene	U		0.00232	0.00600	1	02/08/2021 15:49	WG1617781
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/08/2021 15:49	WG1617781
Fluoranthene	0.00288	J	0.00227	0.00600	1	02/08/2021 15:49	WG1617781
Fluorene	0.0508		0.00205	0.00600	1	02/08/2021 15:49	WG1617781
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/08/2021 15:49	WG1617781
Naphthalene	0.647		0.00408	0.0200	1	02/08/2021 15:49	WG1617781
Phenanthrene	0.0614		0.00231	0.00600	1	02/08/2021 15:49	WG1617781
Pyrene	0.00282	J	0.00200	0.00600	1	02/08/2021 15:49	WG1617781
1-Methylnaphthalene	0.561		0.00449	0.0200	1	02/08/2021 15:49	WG1617781
2-Methylnaphthalene	1.40		0.00427	0.0200	1	02/08/2021 15:49	WG1617781
2-Chloronaphthalene	U		0.00466	0.0200	1	02/08/2021 15:49	WG1617781
(S) p-Terphenyl-d14	*83.3*			*23.0-120*		*02/08/2021 15:49*	WG1617781
(S) Nitrobenzene-d5	*540*	J1		*14.0-149*		*02/08/2021 15:49*	WG1617781
(S) 2-Fluorobiphenyl	*60.0*			*34.0-125*		*02/08/2021 15:49*	WG1617781

Sample Narrative:

L1314613-01 WG1617781: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.51		1	02/09/2021 08:52	WG1617801

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/09/2021 13:04	WG1616050

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.85	T8	1	02/08/2021 17:00	WG1617808

Sample Narrative:

L1314613-02 WG1617808: 8.85 at 22.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	536		10.0	1	02/08/2021 14:02	WG1617995

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	193		0.0852	0.500	1	02/07/2021 14:54	WG1616943
Cadmium	0.423	J	0.0471	0.500	1	02/07/2021 14:54	WG1616943
Copper	12.6		0.400	2.00	1	02/07/2021 14:54	WG1616943
Lead	10.5		0.208	0.500	1	02/07/2021 14:54	WG1616943
Nickel	15.9		0.132	2.00	1	02/07/2021 14:54	WG1616943
Selenium	U		0.764	2.00	1	02/07/2021 14:54	WG1616943
Silver	U		0.127	1.00	1	02/07/2021 14:54	WG1616943
Zinc	38.8		0.832	5.00	1	02/07/2021 14:54	WG1616943

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Boron	0.166	J	0.0167	0.200	1	02/09/2021 11:41	WG1618492

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.88		0.100	1.00	5	02/06/2021 23:01	WG1616946

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4050		10.9	50.0	500	02/07/2021 12:50	WG1617634
(S) a,a,a-Trifluorotoluene(FID)	*89.4*			*77.0-120*		*02/07/2021 12:50*	WG1617634

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	3.37		0.0187	0.0400	40	02/07/2021 23:34	WG1617800
Toluene	81.1		0.520	2.00	400	02/08/2021 15:35	WG1618167
Ethylbenzene	20.3		0.0295	0.100	40	02/07/2021 23:34	WG1617800
Xylenes, Total	262		0.352	2.60	400	02/08/2021 15:35	WG1618167
1,2,4-Trimethylbenzene	47.0		0.0632	0.200	40	02/07/2021 23:34	WG1617800
1,3,5-Trimethylbenzene	35.8		0.0800	0.200	40	02/07/2021 23:34	WG1617800
(S) Toluene-d8	*112*			*75.0-131*		*02/07/2021 23:34*	WG1617800
(S) Toluene-d8	*102*			*75.0-131*		*02/08/2021 15:35*	WG1618167
(S) 4-Bromofluorobenzene	*100*			*67.0-138*		*02/07/2021 23:34*	WG1617800
(S) 4-Bromofluorobenzene	*101*			*67.0-138*		*02/08/2021 15:35*	WG1618167
(S) 1,2-Dichloroethane-d4	*92.0*			*70.0-130*		*02/07/2021 23:34*	WG1617800
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*02/08/2021 15:35*	WG1618167

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.64		1.61	4.00	1	02/09/2021 08:39	WG1617670
C28-C36 Motor Oil Range	38.0		0.274	4.00	1	02/09/2021 08:39	WG1617670
(S) o-Terphenyl	*67.9*			*18.0-148*		*02/09/2021 08:39*	WG1617670

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	02/08/2021 16:09	WG1617781
Acenaphthene	U		0.00209	0.00600	1	02/08/2021 16:09	WG1617781
Acenaphthylene	U		0.00216	0.00600	1	02/08/2021 16:09	WG1617781
Benzo(a)anthracene	U		0.00173	0.00600	1	02/08/2021 16:09	WG1617781
Benzo(a)pyrene	U		0.00179	0.00600	1	02/08/2021 16:09	WG1617781
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/08/2021 16:09	WG1617781
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/08/2021 16:09	WG1617781
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/08/2021 16:09	WG1617781
Chrysene	U		0.00232	0.00600	1	02/08/2021 16:09	WG1617781
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/08/2021 16:09	WG1617781
Fluoranthene	U		0.00227	0.00600	1	02/08/2021 16:09	WG1617781
Fluorene	U		0.00205	0.00600	1	02/08/2021 16:09	WG1617781
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/08/2021 16:09	WG1617781
Naphthalene	0.00418	J	0.00408	0.0200	1	02/08/2021 16:09	WG1617781
Phenanthrene	U		0.00231	0.00600	1	02/08/2021 16:09	WG1617781
Pyrene	U		0.00200	0.00600	1	02/08/2021 16:09	WG1617781
1-Methylnaphthalene	0.00608	J	0.00449	0.0200	1	02/08/2021 16:09	WG1617781
2-Methylnaphthalene	0.0136	J	0.00427	0.0200	1	02/08/2021 16:09	WG1617781
2-Chloronaphthalene	U		0.00466	0.0200	1	02/08/2021 16:09	WG1617781
(S) p-Terphenyl-d14	*76.4*			*23.0-120*		*02/08/2021 16:09*	WG1617781
(S) Nitrobenzene-d5	*76.9*			*14.0-149*		*02/08/2021 16:09*	WG1617781
(S) 2-Fluorobiphenyl	*66.2*			*34.0-125*		*02/08/2021 16:09*	WG1617781

Method Blank (MB)

(MB) R3620851-1 02/09/21 11:54

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

L1314613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314613-02 02/09/21 13:04 • (DUP) R3620851-3 02/09/21 13:09

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

L1312691-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1312691-01 02/09/21 15:08 • (DUP) R3620851-8 02/09/21 15:14

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

Laboratory Control Sample (LCS)

(LCS) R3620851-2 02/09/21 12:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1312691-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1312691-10 02/09/21 14:42 • (MS) R3620851-4 02/09/21 14:48 • (MSD) R3620851-5 02/09/21 14:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	19.6	19.5	97.8	97.3	1	75.0-125			0.491	20

L1312691-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1312691-10 02/09/21 14:42 • (MS) R3620851-6 02/09/21 14:58

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	1130	U	1050	93.2	50	75.0-125	

L1312804-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1312804-06 02/08/21 17:00 • (DUP) R3620505-2 02/08/21 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.19	8.13	1	0.735		1

Sample Narrative:

OS: 8.19 at 22C

DUP: 8.13 at 21.9C

L1314613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314613-02 02/08/21 17:00 • (DUP) R3620505-3 02/08/21 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.85	8.89	1	0.451		1

Sample Narrative:

OS: 8.85 at 22.9C

DUP: 8.89 at 22.3C

Laboratory Control Sample (LCS)

(LCS) R3620505-1 02/08/21 17:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 18.8C

Method Blank (MB)

(MB) R3620462-1 02/08/21 14:02

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

L1314613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314613-02 02/08/21 14:02 • (DUP) R3620462-3 02/08/21 14:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	536	535	1	0.187		20

Laboratory Control Sample (LCS)

(LCS) R3620462-2 02/08/21 14:02

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	483	479	99.2	85.0-115	

Method Blank (MB)

(MB) R3620290-1 02/07/21 13:54

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

Laboratory Control Sample (LCS)

(LCS) R3620290-2 02/07/21 13:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.8	95.8	80.0-120	
Cadmium	100	92.1	92.1	80.0-120	
Copper	100	93.3	93.3	80.0-120	
Lead	100	93.3	93.3	80.0-120	
Nickel	100	94.9	94.9	80.0-120	
Selenium	100	93.0	93.0	80.0-120	
Silver	20.0	16.7	83.7	80.0-120	
Zinc	100	92.3	92.3	80.0-120	

L1313632-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1313632-22 02/07/21 13:59 • (MS) R3620290-5 02/07/21 14:07 • (MSD) R3620290-6 02/07/21 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 %
Barium	100	16.9	122	117	105	99.9	1	75.0-125			4.07	20
Cadmium	100	0.0735	104	101	104	101	1	75.0-125			3.01	20
Copper	100	3.45	108	106	105	102	1	75.0-125			2.27	20
Lead	100	5.06	112	108	107	103	1	75.0-125			4.23	20
Nickel	100	3.13	114	111	111	108	1	75.0-125			3.05	20
Selenium	100	U	103	101	103	101	1	75.0-125			2.21	20
Silver	20.0	U	19.2	18.8	95.8	94.0	1	75.0-125			1.92	20
Zinc	100	18.5	123	116	105	97.6	1	75.0-125			5.79	20

Method Blank (MB)

(MB) R3620747-1 02/09/21 11:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Boron	U		0.0167	0.200

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

(LCS) R3620747-2 02/09/21 11:27 • (LCSD) R3620747-3 02/09/21 11:30

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 %
Boron	1.00	1.03	1.02	103	102	80.0-120			1.35	20

Method Blank (MB)

(MB) R3620239-1 02/06/21 21:52

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) R3620239-2 02/06/21 21:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	92.7	92.7	80.0-120	

L1313632-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1313632-22 02/06/21 21:59 • (MS) R3620239-5 02/06/21 22:08 • (MSD) R3620239-6 02/06/21 22:12

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 %
Arsenic	20.0	5.16	107	104	102	99.0	5	75.0-125			2.62	20

Method Blank (MB)

(MB) R3620344-2 02/07/21 10:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*97.3*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3620344-1 02/07/21 10:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.77	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*107*	*77.0-120*	

Method Blank (MB)

(MB) R3620613-2 02/08/21 16:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*98.4*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3620613-1 02/08/21 15:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.84	88.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*109*	*77.0-120*	

Method Blank (MB)

(MB) R3620432-2 02/07/21 21:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*119*			*75.0-131*
(S) 4-Bromofluorobenzene	*109*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*99.9*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3620432-1 02/07/21 20:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.113	90.4	70.0-123	
Ethylbenzene	0.125	0.130	104	74.0-126	
Toluene	0.125	0.134	107	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.121	96.8	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.116	92.8	73.0-127	
Xylenes, Total	0.375	0.403	107	72.0-127	
(S) Toluene-d8			*117*	*75.0-131*	
(S) 4-Bromofluorobenzene			*106*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*98.5*	*70.0-130*	

Method Blank (MB)

(MB) R3620543-3 02/08/21 10:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*93.5*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*98.4*			*70.0-130*

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

(LCS) R3620543-1 02/08/21 09:26 • (LCSD) R3620543-2 02/08/21 09:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Toluene	0.125	0.127	0.120	102	96.0	75.0-121			5.67	20
Xylenes, Total	0.375	0.381	0.379	102	101	72.0-127			0.526	20
(S) Toluene-d8				*97.6*	*97.6*	*75.0-131*				
(S) 4-Bromofluorobenzene				*97.4*	*96.6*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*102*	*104*	*70.0-130*				

Method Blank (MB)

(MB) R3620578-1 02/08/21 14:04

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	*76.0*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3620578-2 02/08/21 14:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.8	83.6	50.0-150	
(S) o-Terphenyl			*82.1*	*18.0-148*	

L1314607-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314607-01 02/08/21 14:56 • (MS) R3620578-3 02/08/21 15:09 • (MSD) R3620578-4 02/08/21 15:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	576	722	704	292	262	1	50.0-150	E V	E V	2.52	20
(S) o-Terphenyl					*96.5*	*92.2*		*18.0-148*				

Method Blank (MB)

(MB) R3620515-2 02/08/21 09:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*88.8*			*14.0-149*
(S) 2-Fluorobiphenyl	*80.9*			*34.0-125*
(S) p-Terphenyl-d14	*93.5*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3620515-1 02/08/21 09:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0603	75.4	50.0-126	
Acenaphthene	0.0800	0.0614	76.8	50.0-120	
Acenaphthylene	0.0800	0.0666	83.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0625	78.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0462	57.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0571	71.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0557	69.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0592	74.0	49.0-125	
Chrysene	0.0800	0.0608	76.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0585	73.1	47.0-125	
Fluoranthene	0.0800	0.0610	76.3	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3620515-1 02/08/21 09:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0652	81.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0581	72.6	46.0-125	
Naphthalene	0.0800	0.0614	76.8	50.0-120	
Phenanthrene	0.0800	0.0590	73.8	47.0-120	
Pyrene	0.0800	0.0608	76.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0636	79.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0610	76.3	50.0-120	
2-Chloronaphthalene	0.0800	0.0604	75.5	50.0-120	
(S) Nitrobenzene-d5			*90.9*	*14.0-149*	
(S) 2-Fluorobiphenyl			*76.9*	*34.0-125*	
(S) p-Terphenyl-d14			*89.7*	*23.0-120*	

L1314129-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314129-05 02/08/21 12:52 • (MS) R3620515-3 02/08/21 13:12 • (MSD) R3620515-4 02/08/21 13:32

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0776	U	0.0573	0.0545	73.8	69.9	1	10.0-145			5.01	30
Acenaphthene	0.0776	U	0.0598	0.0563	77.1	72.2	1	14.0-127			6.03	27
Acenaphthylene	0.0776	U	0.0625	0.0592	80.5	75.9	1	21.0-124			5.42	25
Benzo(a)anthracene	0.0776	U	0.0576	0.0546	74.2	70.0	1	10.0-139			5.35	30
Benzo(a)pyrene	0.0776	U	0.0563	0.0535	72.6	68.6	1	10.0-141			5.10	31
Benzo(b)fluoranthene	0.0776	U	0.0572	0.0544	73.7	69.7	1	10.0-140			5.02	36
Benzo(g,h,i)perylene	0.0776	U	0.0571	0.0540	73.6	69.2	1	10.0-140			5.58	33
Benzo(k)fluoranthene	0.0776	U	0.0577	0.0549	74.4	70.4	1	10.0-137			4.97	31
Chrysene	0.0776	U	0.0594	0.0565	76.5	72.4	1	10.0-145			5.00	30
Dibenz(a,h)anthracene	0.0776	U	0.0568	0.0542	73.2	69.5	1	10.0-132			4.68	31
Fluoranthene	0.0776	U	0.0585	0.0555	75.4	71.2	1	10.0-153			5.26	33
Fluorene	0.0776	U	0.0623	0.0592	80.3	75.9	1	11.0-130			5.10	29
Indeno(1,2,3-cd)pyrene	0.0776	U	0.0560	0.0540	72.2	69.2	1	10.0-137			3.64	32
Naphthalene	0.0776	U	0.0594	0.0566	76.5	72.6	1	10.0-135			4.83	27
Phenanthrene	0.0776	U	0.0584	0.0558	75.3	71.5	1	10.0-144			4.55	31
Pyrene	0.0776	U	0.0584	0.0565	75.3	72.4	1	10.0-148			3.31	35
1-Methylnaphthalene	0.0776	U	0.0612	0.0578	78.9	74.1	1	10.0-142			5.71	28
2-Methylnaphthalene	0.0776	U	0.0580	0.0552	74.7	70.8	1	10.0-137			4.95	28
2-Chloronaphthalene	0.0776	U	0.0590	0.0558	76.0	71.5	1	29.0-120			5.57	24
(S) Nitrobenzene-d5					*85.2*	*80.7*		*14.0-149*				
(S) 2-Fluorobiphenyl					*79.1*	*74.8*		*34.0-125*				
(S) p-Terphenyl-d14					*89.4*	*85.4*		*23.0-120*				

L1314095-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314095-01 02/08/21 16:28 • (MS) R3620515-5 02/08/21 16:48 • (MSD) R3620515-6 02/08/21 17:07

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 %
Anthracene	0.0792	0.0156	0.0506	0.0506	44.2	44.0	1	10.0-145			0.000	30
Acenaphthene	0.0792	0.0182	0.0676	0.0744	62.4	70.6	1	14.0-127			9.58	27
Acenaphthylene	0.0792	0.0526	0.0917	0.0984	49.4	57.5	1	21.0-124			7.05	25
Benzo(a)anthracene	0.0792	0.113	0.132	0.156	24.0	54.0	1	10.0-139			16.7	30
Benzo(a)pyrene	0.0792	0.0470	0.0656	0.0925	23.5	57.2	1	10.0-141		J3	34.0	31
Benzo(b)fluoranthene	0.0792	0.0766	0.0931	0.130	20.8	67.1	1	10.0-140			33.1	36
Benzo(g,h,i)perylene	0.0792	0.0194	0.0293	0.0438	12.5	30.7	1	10.0-140		J3	39.7	33
Benzo(k)fluoranthene	0.0792	0.0210	0.0458	0.0614	31.3	50.8	1	10.0-137			29.1	31
Chrysene	0.0792	0.131	0.145	0.177	17.7	57.8	1	10.0-145			19.9	30
Dibenz(a,h)anthracene	0.0792	0.0160	0.0444	0.0501	35.9	42.8	1	10.0-132			12.1	31
Fluoranthene	0.0792	0.177	0.184	0.213	8.84	45.2	1	10.0-153	J6		14.6	33
Fluorene	0.0792	0.0442	0.0877	0.0956	54.9	64.6	1	11.0-130			8.62	29
Indeno(1,2,3-cd)pyrene	0.0792	0.0349	0.0461	0.0674	14.1	40.8	1	10.0-137		J3	37.5	32
Naphthalene	0.0792	0.0745	0.119	0.119	56.2	55.9	1	10.0-135			0.000	27
Phenanthrene	0.0792	0.262	0.262	0.274	0.000	15.1	1	10.0-144	J6		4.48	31
Pyrene	0.0792	0.169	0.179	0.204	12.6	44.0	1	10.0-148			13.1	35
1-Methylnaphthalene	0.0792	0.628	0.622	0.603	0.000	0.000	1	10.0-142	V	V	3.10	28
2-Methylnaphthalene	0.0792	0.249	0.276	0.265	34.1	20.1	1	10.0-137			4.07	28
2-Chloronaphthalene	0.0792	0.0242	0.0642	0.0712	50.5	59.0	1	29.0-120			10.3	24
(S) Nitrobenzene-d5					*76.8*	*97.6*		*14.0-149*				
(S) 2-Fluorobiphenyl					*68.3*	*77.7*		*34.0-125*				
(S) p-Terphenyl-d14					*53.3*	*61.0*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
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.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* 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 National.

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		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr. Ste. C Sacramento, CA, 95811

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Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

Pace Analytical National 6000 South Eastern Avenue Ste 9A Las Vegas, NV, 89119

Nevada	NV009412021-1

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Texas	T104704328-20-18

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

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

Billing Information: **Same as above**

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

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

Project Description: **J17E Dumpline Release**

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

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Evan Mason

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR , EC, pH, Boron	TABLE 915-1- Metals	Remarks	Sample # (lab only)
20210205-J17E (center)@31'	Grab	SS	31'	2/5/21	1330	2	X	X	X	X	X		-01
20210205-J17E(south)@31'	Grab	SS	31'	2/5/21	1630	2	X	X	X	X	X		-02

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

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

L # 1314613
F218

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 1676 2750 4027

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/5/21	1600	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/5/21	1720	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes (No) HCL / MeoH TBR

Temp: 2.2 °C Bottles Received: 4
3.0+.1=3.1

Date: 2/6/21 Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 11, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1315171
Samples Received:	02/09/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

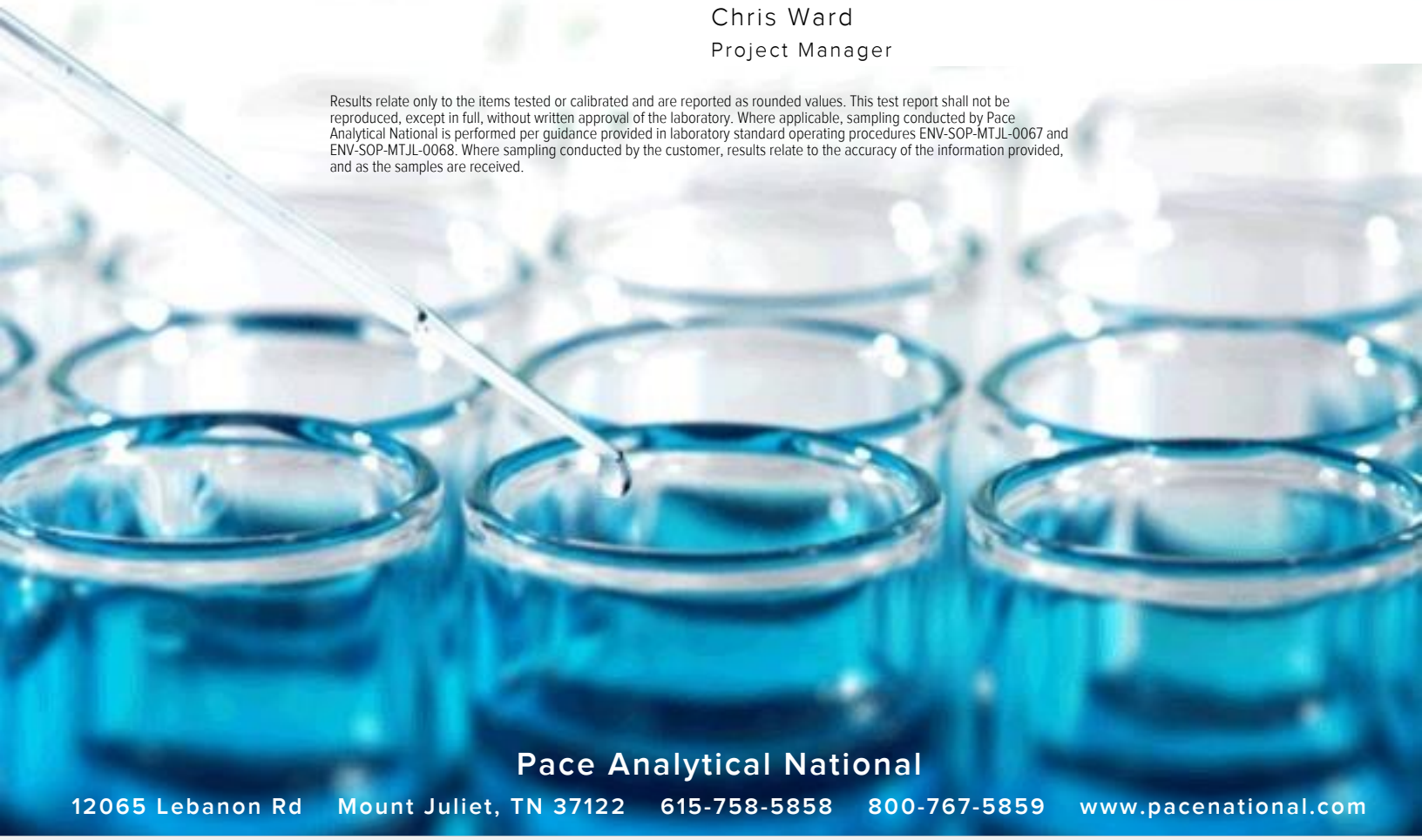

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TABLE OF CONTENTS

20210208-J17E(EAST)@5' L1315171-01 Solid

Collected by: Evan Mason
Collected date/time: 02/08/21 08:45
Received date/time: 02/09/21 08:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1618913	1	02/11/21 09:39	02/11/21 09:39	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1617823	1	02/09/21 18:44	02/10/21 00:23	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1618810	1	02/09/21 21:02	02/10/21 00:35	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1619890	1	02/11/21 09:47	02/11/21 13:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1618797	1	02/09/21 17:57	02/10/21 11:04	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1619571	1	02/10/21 17:15	02/11/21 10:43	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1618794	5	02/09/21 17:30	02/09/21 22:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1618846	200	02/09/21 14:25	02/10/21 04:45	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1618877	20	02/09/21 14:25	02/10/21 05:49	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1618691	1	02/10/21 04:12	02/10/21 20:25	JN	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1618691	5	02/10/21 04:12	02/11/21 07:42	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1618977	1	02/10/21 00:30	02/10/21 09:01	AMG	Mt. Juliet, TN

20210208-J17E(EAST)@31' L1315171-02 Solid

Collected by: Evan Mason
Collected date/time: 02/08/21 12:00
Received date/time: 02/09/21 08:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1618913	1	02/11/21 09:42	02/11/21 09:42	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1617823	1	02/09/21 18:44	02/10/21 00:29	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1618810	1	02/09/21 21:02	02/10/21 00:35	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1619890	1	02/11/21 09:47	02/11/21 13:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1618797	1	02/09/21 17:57	02/10/21 11:07	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1619571	1	02/10/21 17:15	02/11/21 10:46	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1618794	5	02/09/21 17:30	02/09/21 22:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1618846	1	02/09/21 14:25	02/10/21 03:13	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1618877	1	02/09/21 14:25	02/10/21 01:43	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1618691	1	02/10/21 04:12	02/11/21 04:52	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1618977	1	02/10/21 00:30	02/10/21 09:20	AMG	Mt. Juliet, TN

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	5.00		1	02/11/2021 09:39	WG1618913

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/10/2021 00:23	WG1617823

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.59	T8	1	02/10/2021 00:35	WG1618810

Sample Narrative:

L1315171-01 WG1618810: 8.59 at 21.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	665		10.0	1	02/11/2021 13:02	WG1619890

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	163		0.500	1	02/10/2021 11:04	WG1618797
Cadmium	ND		0.500	1	02/10/2021 11:04	WG1618797
Copper	10.0		2.00	1	02/10/2021 11:04	WG1618797
Lead	7.22		0.500	1	02/10/2021 11:04	WG1618797
Nickel	12.2		2.00	1	02/10/2021 11:04	WG1618797
Selenium	ND		2.00	1	02/10/2021 11:04	WG1618797
Silver	ND		1.00	1	02/10/2021 11:04	WG1618797
Zinc	27.0		5.00	1	02/10/2021 11:04	WG1618797

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/11/2021 10:43	WG1619571

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.5		1.00	5	02/09/2021 22:30	WG1618794

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	415		20.0	200	02/10/2021 04:45	WG1618846
(S) a,a,a-Trifluorotoluene(FID)	*96.5*		*77.0-120*		*02/10/2021 04:45*	WG1618846

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.0200	20	02/10/2021 05:49	WG1618877
Ethylbenzene	0.546		0.0500	20	02/10/2021 05:49	WG1618877
Toluene	0.211		0.100	20	02/10/2021 05:49	WG1618877
1,2,4-Trimethylbenzene	5.19		0.100	20	02/10/2021 05:49	WG1618877
1,3,5-Trimethylbenzene	4.06		0.100	20	02/10/2021 05:49	WG1618877
Xylenes, Total	12.2		0.130	20	02/10/2021 05:49	WG1618877
(S) Toluene-d8	*118*		*75.0-131*		*02/10/2021 05:49*	WG1618877
(S) 4-Bromofluorobenzene	*104*		*67.0-138*		*02/10/2021 05:49*	WG1618877
(S) 1,2-Dichloroethane-d4	*108*		*70.0-130*		*02/10/2021 05:49*	WG1618877

Sample Narrative:

L1315171-01 WG1618877: Non-target compounds too high to run at a lower dilution.

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	525		20.0	5	02/11/2021 07:42	WG1618691
C28-C36 Motor Oil Range	108		4.00	1	02/10/2021 20:25	WG1618691
(S) o-Terphenyl	*59.6*		*18.0-148*		*02/10/2021 20:25*	WG1618691
(S) o-Terphenyl	*56.8*		*18.0-148*		*02/11/2021 07:42*	WG1618691

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Acenaphthene	0.0112		0.00600	1	02/10/2021 09:01	WG1618977
Acenaphthylene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Benzo(a)anthracene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Benzo(a)pyrene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Benzo(b)fluoranthene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Benzo(g,h,i)perylene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Benzo(k)fluoranthene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Chrysene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Dibenz(a,h)anthracene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Fluoranthene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Fluorene	0.0282		0.00600	1	02/10/2021 09:01	WG1618977
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/10/2021 09:01	WG1618977
Naphthalene	0.269		0.0200	1	02/10/2021 09:01	WG1618977
Phenanthrene	0.0334		0.00600	1	02/10/2021 09:01	WG1618977
Pyrene	ND		0.00600	1	02/10/2021 09:01	WG1618977
1-Methylnaphthalene	0.275		0.0200	1	02/10/2021 09:01	WG1618977
2-Methylnaphthalene	0.719		0.0200	1	02/10/2021 09:01	WG1618977
2-Chloronaphthalene	ND		0.0200	1	02/10/2021 09:01	WG1618977
(S) p-Terphenyl-d14	*101*		*23.0-120*		*02/10/2021 09:01*	WG1618977
(S) Nitrobenzene-d5	*337*	J1	*14.0-149*		*02/10/2021 09:01*	WG1618977
(S) 2-Fluorobiphenyl	*81.8*		*34.0-125*		*02/10/2021 09:01*	WG1618977

Sample Narrative:

L1315171-01 WG1618977: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	38.3		1	02/11/2021 09:42	WG1618913

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/10/2021 00:29	WG1617823

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.75	T8	1	02/10/2021 00:35	WG1618810

Sample Narrative:
L1315171-02 WG1618810: 9.75 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	883		10.0	1	02/11/2021 13:02	WG1619890

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	169		0.500	1	02/10/2021 11:07	WG1618797
Cadmium	ND		0.500	1	02/10/2021 11:07	WG1618797
Copper	11.3		2.00	1	02/10/2021 11:07	WG1618797
Lead	8.19		0.500	1	02/10/2021 11:07	WG1618797
Nickel	15.1		2.00	1	02/10/2021 11:07	WG1618797
Selenium	ND		2.00	1	02/10/2021 11:07	WG1618797
Silver	ND		1.00	1	02/10/2021 11:07	WG1618797
Zinc	39.3		5.00	1	02/10/2021 11:07	WG1618797

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.367		0.200	1	02/11/2021 10:46	WG1619571

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.61		1.00	5	02/09/2021 22:33	WG1618794

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.12		0.100	1	02/10/2021 03:13	WG1618846
(S) a,a,a-Trifluorotoluene(FID)	*91.7*		*77.0-120*		*02/10/2021 03:13*	WG1618846

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	02/10/2021 01:43	WG1618877
Ethylbenzene	ND		0.00250	1	02/10/2021 01:43	WG1618877
Toluene	ND		0.00500	1	02/10/2021 01:43	WG1618877
1,2,4-Trimethylbenzene	ND		0.00500	1	02/10/2021 01:43	WG1618877
1,3,5-Trimethylbenzene	ND		0.00500	1	02/10/2021 01:43	WG1618877
Xylenes, Total	ND		0.00650	1	02/10/2021 01:43	WG1618877
(S) Toluene-d8	*118*		*75.0-131*		*02/10/2021 01:43*	WG1618877
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*02/10/2021 01:43*	WG1618877
(S) 1,2-Dichloroethane-d4	*108*		*70.0-130*		*02/10/2021 01:43*	WG1618877

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	02/11/2021 04:52	WG1618691
C28-C36 Motor Oil Range	11.5		4.00	1	02/11/2021 04:52	WG1618691
(S) o-Terphenyl	*78.0*		*18.0-148*		*02/11/2021 04:52*	WG1618691

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Acenaphthene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Acenaphthylene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Benzo(a)anthracene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Benzo(a)pyrene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Benzo(b)fluoranthene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Benzo(g,h,i)perylene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Benzo(k)fluoranthene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Chrysene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Dibenz(a,h)anthracene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Fluoranthene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Fluorene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Naphthalene	ND		0.0200	1	02/10/2021 09:20	WG1618977
Phenanthrene	ND		0.00600	1	02/10/2021 09:20	WG1618977
Pyrene	ND		0.00600	1	02/10/2021 09:20	WG1618977
1-Methylnaphthalene	ND		0.0200	1	02/10/2021 09:20	WG1618977
2-Methylnaphthalene	ND		0.0200	1	02/10/2021 09:20	WG1618977
2-Chloronaphthalene	ND		0.0200	1	02/10/2021 09:20	WG1618977
(S) p-Terphenyl-d14	*84.6*		*23.0-120*		*02/10/2021 09:20*	WG1618977
(S) Nitrobenzene-d5	*75.8*		*14.0-149*		*02/10/2021 09:20*	WG1618977
(S) 2-Fluorobiphenyl	*76.9*		*34.0-125*		*02/10/2021 09:20*	WG1618977

Method Blank (MB)

(MB) R3621192-1 02/09/21 21:25

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

L1313160-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1313160-01 02/09/21 23:01 • (DUP) R3621192-3 02/09/21 23:08

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

L1315187-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1315187-09 02/10/21 01:26 • (DUP) R3621192-8 02/10/21 01:31

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

Laboratory Control Sample (LCS)

(LCS) R3621192-2 02/09/21 21:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.90	99.0	80.0-120	

L1313325-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1313325-03 02/09/21 23:14 • (MS) R3621192-4 02/09/21 23:19 • (MSD) R3621192-5 02/09/21 23:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	ND	15.0	16.2	74.8	81.2	1	75.0-125	J6		8.19	20

L1313325-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1313325-03 02/09/21 23:14 • (MS) R3621192-6 02/09/21 23:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	955	ND	933	97.7	50	75.0-125	

L1313989-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1313989-02 02/10/21 00:35 • (DUP) R3620960-2 02/10/21 00:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.82	7.85	1	0.383		1

Sample Narrative:
OS: 7.82 at 21C
DUP: 7.85 at 21.5C

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3620960-3 02/10/21 00:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
		su		%		%
pH		7.93	1	0.126		1

Sample Narrative:
DUP: 7.93 at 21.4C

L1313989-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1313989-02 02/10/21 00:35 • (DUP) R3620962-2 02/10/21 00:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.82	7.85	1	0.383		1

Sample Narrative:
OS: 7.82 at 21C
DUP: 7.85 at 21.5C

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3620962-3 02/10/21 00:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
		su		%		%
pH		7.93	1	0.126		1

Sample Narrative:
DUP: 7.93 at 21.4C

Laboratory Control Sample (LCS)

(LCS) R3620960-1 02/10/21 00:35

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

Sample Narrative:

LCS: 10.02 at 20C

Laboratory Control Sample (LCS)

(LCS) R3620962-1 02/10/21 00:35

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

Sample Narrative:

LCS: 10.02 at 20C

Method Blank (MB)

(MB) R3621638-1 02/11/21 13:02

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

L1315171-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315171-01 02/11/21 13:02 • (DUP) R3621638-3 02/11/21 13:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	665	653	1	1.82		20

L1315648-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315648-01 02/11/21 13:02 • (DUP) R3621638-4 02/11/21 13:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	94.6	90.8	1	4.10		20

Laboratory Control Sample (LCS)

(LCS) R3621638-2 02/11/21 13:02

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	483	482	99.8	85.0-115	

Method Blank (MB)

(MB) R3621232-1 02/10/21 10:43

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) R3621232-2 02/10/21 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.0	95.0	80.0-120	
Cadmium	100	91.1	91.1	80.0-120	
Copper	100	91.1	91.1	80.0-120	
Lead	100	91.8	91.8	80.0-120	
Nickel	100	94.1	94.1	80.0-120	
Selenium	100	93.9	93.9	80.0-120	
Silver	20.0	16.5	82.3	80.0-120	
Zinc	100	91.8	91.8	80.0-120	

L1315187-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315187-04 02/10/21 10:49 • (MS) R3621232-5 02/10/21 10:58 • (MSD) R3621232-6 02/10/21 11:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	114	220	219	105	105	1	75.0-125			0.338	20
Cadmium	100	ND	93.0	95.0	92.7	94.7	1	75.0-125			2.13	20
Copper	100	6.91	99.0	99.9	92.1	93.0	1	75.0-125			0.910	20
Lead	100	5.24	99.2	100	93.9	94.8	1	75.0-125			0.894	20
Nickel	100	8.61	105	107	96.3	97.9	1	75.0-125			1.50	20
Selenium	100	ND	94.7	98.0	93.5	96.8	1	75.0-125			3.44	20
Silver	20.0	ND	17.2	17.3	86.1	86.3	1	75.0-125			0.304	20
Zinc	100	25.8	111	113	85.6	87.3	1	75.0-125			1.53	20

Method Blank (MB)

(MB) R3621669-1 02/11/21 10:35

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

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

(LCS) R3621669-2 02/11/21 10:38 • (LCSD) R3621669-3 02/11/21 10:40

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 %
Hot Water Sol. Boron	1.00	0.977	1.02	97.7	102	80.0-120			3.98	20

Method Blank (MB)

(MB) R3620936-1 02/09/21 21:45

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) R3620936-2 02/09/21 21:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	87.9	87.9	80.0-120	

L1315187-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315187-04 02/09/21 21:52 • (MS) R3620936-5 02/09/21 22:02 • (MSD) R3620936-6 02/09/21 22:06

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	20.0	2.90	89.7	93.2	86.8	90.3	5	75.0-125			3.85	20

Method Blank (MB)

(MB) R3621023-2 02/09/21 20:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0833	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*98.3*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3621023-1 02/09/21 19:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.80	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*98.1*	*77.0-120*	

Method Blank (MB)

(MB) R3621081-3 02/09/21 21:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*116*			*75.0-131*
(S) 4-Bromofluorobenzene	*104*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*

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

(LCS) R3621081-1 02/09/21 20:02 • (LCSD) R3621081-2 02/09/21 20:21

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	0.110	0.113	88.0	90.4	70.0-123			2.69	20
Ethylbenzene	0.125	0.127	0.132	102	106	74.0-126			3.86	20
Toluene	0.125	0.125	0.130	100	104	75.0-121			3.92	20
1,2,4-Trimethylbenzene	0.125	0.114	0.113	91.2	90.4	70.0-126			0.881	20
1,3,5-Trimethylbenzene	0.125	0.115	0.114	92.0	91.2	73.0-127			0.873	20
Xylenes, Total	0.375	0.391	0.398	104	106	72.0-127			1.77	20
(S) Toluene-d8				*116*	*116*	*75.0-131*				
(S) 4-Bromofluorobenzene				*106*	*106*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*101*	*105*	*70.0-130*				

L1315171-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315171-01 02/10/21 05:49 • (MS) R3621081-4 02/10/21 10:13 • (MSD) R3621081-5 02/10/21 10:32

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	2.50	ND	2.31	2.44	91.9	97.1	20	10.0-149			5.47	37
Ethylbenzene	2.50	0.546	3.25	3.43	108	115	20	10.0-160			5.39	38
Toluene	2.50	0.211	2.90	2.99	108	111	20	10.0-156			3.06	38
1,2,4-Trimethylbenzene	2.50	5.19	7.61	7.90	96.8	108	20	10.0-160			3.74	36
1,3,5-Trimethylbenzene	2.50	4.06	7.79	7.62	149	142	20	10.0-160			2.21	38
Xylenes, Total	7.50	12.2	19.9	20.4	103	109	20	10.0-160			2.48	38
(S) Toluene-d8					*115*	*116*		*75.0-131*				
(S) 4-Bromofluorobenzene					*101*	*101*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*104*	*106*		*70.0-130*				

L1315171-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315171-01 02/10/21 05:49 • (MS) R3621081-4 02/10/21 10:13 • (MSD) R3621081-5 02/10/21 10:32

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

Sample Narrative:

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

Method Blank (MB)

(MB) R3621439-1 02/10/21 16:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	*72.4*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3621439-2 02/10/21 16:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	49.8	99.6	50.0-150	
(S) o-Terphenyl			*77.6*	*18.0-148*	

Method Blank (MB)

(MB) R3621243-2 02/10/21 08:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*91.7*			*14.0-149*
(S) 2-Fluorobiphenyl	*97.2*			*34.0-125*
(S) p-Terphenyl-d14	*112*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3621243-1 02/10/21 08:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0721	90.1	50.0-126	
Acenaphthene	0.0800	0.0709	88.6	50.0-120	
Acenaphthylene	0.0800	0.0762	95.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0738	92.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0609	76.1	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0667	83.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0674	84.3	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0683	85.4	49.0-125	
Chrysene	0.0800	0.0727	90.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0700	87.5	47.0-125	
Fluoranthene	0.0800	0.0729	91.1	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3621243-1 02/10/21 08:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0767	95.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0706	88.3	46.0-125	
Naphthalene	0.0800	0.0699	87.4	50.0-120	
Phenanthrene	0.0800	0.0709	88.6	47.0-120	
Pyrene	0.0800	0.0710	88.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0726	90.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0700	87.5	50.0-120	
2-Chloronaphthalene	0.0800	0.0714	89.3	50.0-120	
(S) Nitrobenzene-d5			*92.4*	*14.0-149*	
(S) 2-Fluorobiphenyl			*96.2*	*34.0-125*	
(S) p-Terphenyl-d14			*110*	*23.0-120*	

L1314335-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314335-14 02/10/21 13:56 • (MS) R3621243-3 02/10/21 14:16 • (MSD) R3621243-4 02/10/21 14:35

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 %
Anthracene	0.0764	0.00793	0.0718	0.0789	83.6	91.0	1	10.0-145			9.42	30
Acenaphthene	0.0764	0.0308	0.0963	0.102	85.7	91.3	1	14.0-127			5.75	27
Acenaphthylene	0.0764	ND	0.0780	0.0856	102	110	1	21.0-124			9.29	25
Benzo(a)anthracene	0.0764	0.0185	0.0890	0.100	92.3	104	1	10.0-139			11.6	30
Benzo(a)pyrene	0.0764	0.0164	0.0792	0.0938	82.2	99.2	1	10.0-141			16.9	31
Benzo(b)fluoranthene	0.0764	0.0276	0.0883	0.103	79.5	96.7	1	10.0-140			15.4	36
Benzo(g,h,i)perylene	0.0764	0.0181	0.0761	0.0905	75.9	92.8	1	10.0-140			17.3	33
Benzo(k)fluoranthene	0.0764	0.00930	0.0707	0.0826	80.4	94.0	1	10.0-137			15.5	31
Chrysene	0.0764	0.0205	0.0931	0.106	95.0	110	1	10.0-145			13.0	30
Dibenz(a,h)anthracene	0.0764	ND	0.0609	0.0677	75.4	82.6	1	10.0-132			10.6	31
Fluoranthene	0.0764	0.0514	0.126	0.139	97.6	112	1	10.0-153			9.81	33
Fluorene	0.0764	0.0370	0.109	0.115	94.2	100	1	11.0-130			5.36	29
Indeno(1,2,3-cd)pyrene	0.0764	0.0170	0.0776	0.0935	79.3	98.1	1	10.0-137			18.6	32
Naphthalene	0.0764	2.70	3.69	3.47	1300	987	1	10.0-135	V	V	6.15	27
Phenanthrene	0.0764	0.0586	0.134	0.137	98.7	101	1	10.0-144			2.21	31
Pyrene	0.0764	0.0528	0.123	0.134	91.9	104	1	10.0-148			8.56	35
1-Methylnaphthalene	0.0764	2.23	2.82	2.80	772	731	1	10.0-142	V	V	0.712	28
2-Methylnaphthalene	0.0764	4.38	5.41	5.36	1350	1260	1	10.0-137	E V	E V	0.928	28
2-Chloronaphthalene	0.0764	ND	0.0673	0.0752	88.1	96.4	1	29.0-120			11.1	24
(S) Nitrobenzene-d5					*319*	*326*		*14.0-149*	J1	J1		
(S) 2-Fluorobiphenyl					*92.7*	*96.8*		*34.0-125*				
(S) p-Terphenyl-d14					*100*	*105*		*23.0-120*				

L1314335-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314335-14 02/10/21 13:56 • (MS) R3621243-3 02/10/21 14:16 • (MSD) R3621243-4 02/10/21 14:35

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 %

Sample Narrative:

OS: Surrogate failure due to matrix interference

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.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
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.

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* 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 National.

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Alaska	17-026	Nevada	TN000032021-1
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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
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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		

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

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

Billing Information: **Same as above**

Pres Chk

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

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

Project Description: **J17E Dumpline Release**

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

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Evan Mason

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: ~~Standard TAT~~

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH-GRO,DRO,ORO	BTEX	TABLE 915-1-PAH's	SAR, EC, pH, Boron	TABLE 915-1-Metals					Remarks	Sample # (lab only)
20210208-J17E(East)@5'	Grab	SS	5'	2/8/21	845	2	X	X	X	X	X						-01
20210208-J17E (East)@31'	Grab	SS	31'	2/8/21	1200	2	X	X	X	X	X						-02

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L # 131517
J134

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 1676 2750 4884

Sample Receipt Checklist
COC Seal Present/Intact: NP __Y __N
COC Signed/Accurate: ✓ __Y __N
Bottles arrive intact: ✓ __Y __N
Correct bottles used: ✓ __Y __N
Sufficient volume sent: ✓ __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	2/8/21	1430			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.6 °C Bottles Received:	
	2/8/21	1700		4.7-.1=4.6 4	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: / Condition: NCF / OK
			Fatima Mukhail	2-9-21 0815	

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ANALYTICAL REPORT

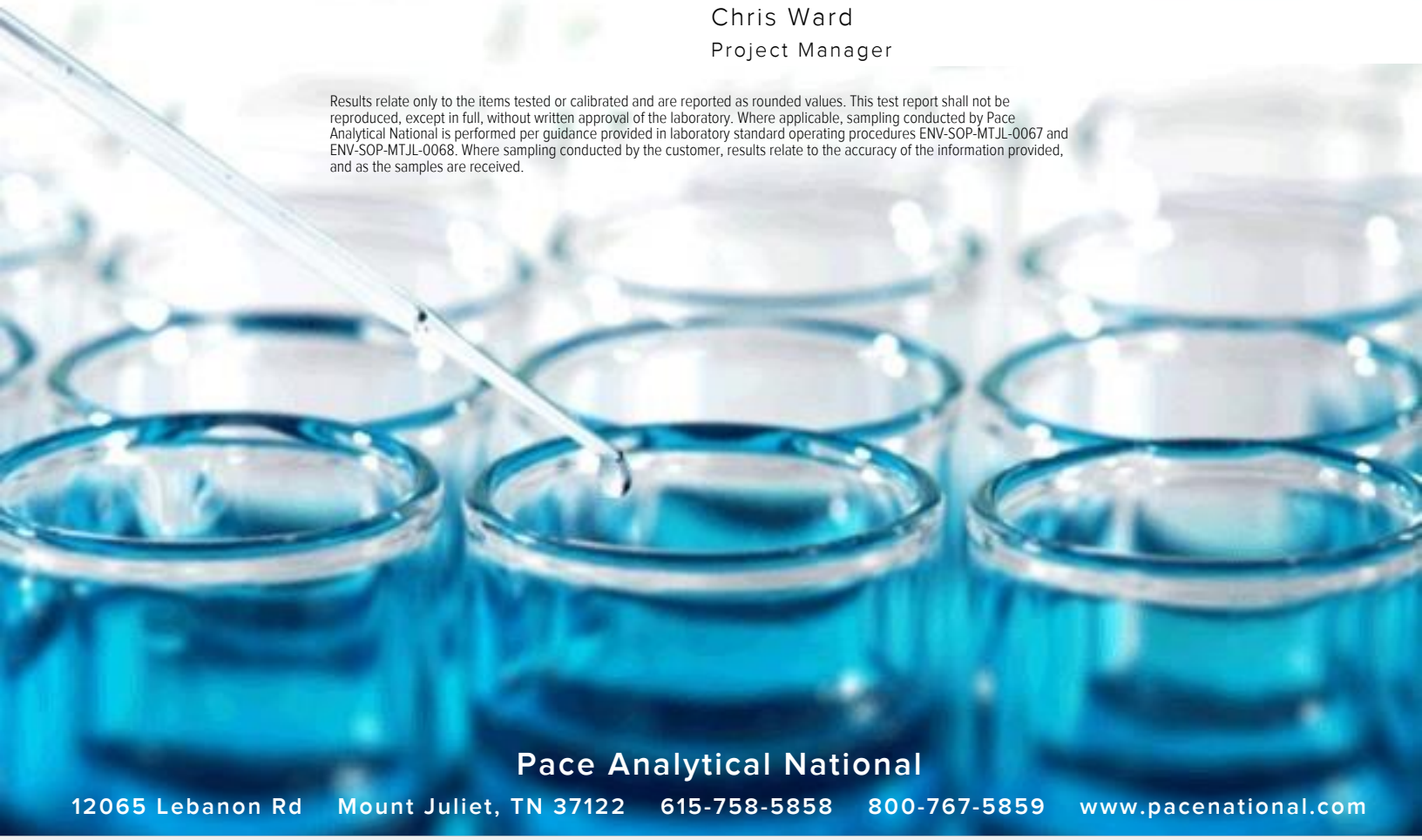
February 12, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1315679
Samples Received:	02/10/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210209-J17E (WEST) @31' L1315679-01 Solid

Collected by: Dustin Held
Collected date/time: 02/09/21 10:00
Received date/time: 02/10/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1619782	1	02/12/21 07:39	02/12/21 07:39	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1619374	1	02/11/21 18:52	02/12/21 01:40	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1620297	1	02/12/21 11:40	02/12/21 14:00	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1619890	1	02/11/21 09:47	02/11/21 13:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1619678	1	02/10/21 22:23	02/11/21 10:09	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1619571	1	02/10/21 17:15	02/11/21 11:20	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1619679	5	02/10/21 22:22	02/11/21 10:24	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1619832	1	02/10/21 23:03	02/11/21 12:51	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1619839	1	02/10/21 23:03	02/12/21 01:47	GLN	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1619660	1	02/11/21 00:56	02/11/21 17:20	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1619417	1	02/11/21 00:12	02/11/21 12:50	LEA	Mt. Juliet, TN

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	1.57		1	02/12/2021 07:39	WG1619782

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J6	0.255	1.00	1	02/12/2021 01:40	WG1619374

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.81	T8	1	02/12/2021 14:00	WG1620297

Sample Narrative:

L1315679-01 WG1620297: 8.81 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	248		10.0	1	02/11/2021 13:02	WG1619890

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	149	O1	0.0852	0.500	1	02/11/2021 10:09	WG1619678
Cadmium	0.517		0.0471	0.500	1	02/11/2021 10:09	WG1619678
Copper	14.5		0.400	2.00	1	02/11/2021 10:09	WG1619678
Lead	9.64		0.208	0.500	1	02/11/2021 10:09	WG1619678
Nickel	17.0	O1	0.132	2.00	1	02/11/2021 10:09	WG1619678
Selenium	2.15		0.764	2.00	1	02/11/2021 10:09	WG1619678
Silver	U		0.127	1.00	1	02/11/2021 10:09	WG1619678
Zinc	43.9	O1	0.832	5.00	1	02/11/2021 10:09	WG1619678

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.148	J	0.0167	0.200	1	02/11/2021 11:20	WG1619571

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.0		0.100	1.00	5	02/11/2021 10:24	WG1619679

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0653	J	0.0217	0.100	1	02/11/2021 12:51	WG1619832
(S) a,a,a-Trifluorotoluene(FID)	*92.1*			*77.0-120*		*02/11/2021 12:51*	WG1619832

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	02/12/2021 01:47	WG1619839
Toluene	U		0.00130	0.00500	1	02/12/2021 01:47	WG1619839
Ethylbenzene	U		0.000737	0.00250	1	02/12/2021 01:47	WG1619839
Xylenes, Total	0.00378	J	0.000880	0.00650	1	02/12/2021 01:47	WG1619839
1,2,4-Trimethylbenzene	0.00295	J	0.00158	0.00500	1	02/12/2021 01:47	WG1619839
1,3,5-Trimethylbenzene	0.00338	J	0.00200	0.00500	1	02/12/2021 01:47	WG1619839
(S) Toluene-d8	*96.8*			*75.0-131*		*02/12/2021 01:47*	WG1619839
(S) 4-Bromofluorobenzene	*101*			*67.0-138*		*02/12/2021 01:47*	WG1619839
(S) 1,2-Dichloroethane-d4	*94.7*			*70.0-130*		*02/12/2021 01:47*	WG1619839

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.26		1.61	4.00	1	02/11/2021 17:20	WG1619660
C28-C36 Motor Oil Range	25.2		0.274	4.00	1	02/11/2021 17:20	WG1619660
(S) o-Terphenyl	*72.5*			*18.0-148*		*02/11/2021 17:20*	WG1619660

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	02/11/2021 12:50	WG1619417
Acenaphthene	U		0.00209	0.00600	1	02/11/2021 12:50	WG1619417
Acenaphthylene	U		0.00216	0.00600	1	02/11/2021 12:50	WG1619417
Benzo(a)anthracene	U		0.00173	0.00600	1	02/11/2021 12:50	WG1619417
Benzo(a)pyrene	U		0.00179	0.00600	1	02/11/2021 12:50	WG1619417
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/11/2021 12:50	WG1619417
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/11/2021 12:50	WG1619417
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/11/2021 12:50	WG1619417
Chrysene	U		0.00232	0.00600	1	02/11/2021 12:50	WG1619417
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/11/2021 12:50	WG1619417
Fluoranthene	U		0.00227	0.00600	1	02/11/2021 12:50	WG1619417
Fluorene	U		0.00205	0.00600	1	02/11/2021 12:50	WG1619417
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/11/2021 12:50	WG1619417
Naphthalene	U		0.00408	0.0200	1	02/11/2021 12:50	WG1619417
Phenanthrene	U		0.00231	0.00600	1	02/11/2021 12:50	WG1619417
Pyrene	U		0.00200	0.00600	1	02/11/2021 12:50	WG1619417
1-Methylnaphthalene	U		0.00449	0.0200	1	02/11/2021 12:50	WG1619417
2-Methylnaphthalene	U		0.00427	0.0200	1	02/11/2021 12:50	WG1619417
2-Chloronaphthalene	U		0.00466	0.0200	1	02/11/2021 12:50	WG1619417
(S) p-Terphenyl-d14	*93.0*			*23.0-120*		*02/11/2021 12:50*	WG1619417
(S) Nitrobenzene-d5	*70.8*			*14.0-149*		*02/11/2021 12:50*	WG1619417
(S) 2-Fluorobiphenyl	*82.6*			*34.0-125*		*02/11/2021 12:50*	WG1619417

Method Blank (MB)

(MB) R3622085-1 02/11/21 23:02

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

L1314315-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1314315-01 02/11/21 23:44 • (DUP) R3622085-3 02/11/21 23:51

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

L1316225-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1316225-01 02/12/21 01:20 • (DUP) R3622085-4 02/12/21 01:25

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.678	0.655	1	3.48	J	20

Laboratory Control Sample (LCS)

(LCS) R3622085-2 02/11/21 23:09

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

L1315679-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315679-01 02/12/21 01:40 • (MS) R3622085-5 02/12/21 01:46 • (MSD) R3622085-6 02/12/21 01:51

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 %
Hexavalent Chromium	20.0	U	13.4	13.4	67.1	67.2	1	75.0-125	J6	J6	0.0717	20

L1315679-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1315679-01 02/12/21 01:40 • (MS) R3622085-7 02/12/21 01:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	1030	U	820	79.6	50	75.0-125	

L1315630-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1315630-07 02/12/21 14:00 • (DUP) R3622096-2 02/12/21 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.71	8.71	1	0.000		1

Sample Narrative:

OS: 8.71 at 20.2C

DUP: 8.71 at 19.8C

L1315779-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315779-01 02/12/21 14:00 • (DUP) R3622096-3 02/12/21 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.33	8.32	1	0.120		1

Sample Narrative:

OS: 8.33 at 19.2C

DUP: 8.32 at 19.1C

Laboratory Control Sample (LCS)

(LCS) R3622096-1 02/12/21 14:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.07 at 19.4C

Method Blank (MB)

(MB) R3621638-1 02/11/21 13:02

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

L1315171-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315171-01 02/11/21 13:02 • (DUP) R3621638-3 02/11/21 13:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	665	653	1	1.82		20

L1315648-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315648-01 02/11/21 13:02 • (DUP) R3621638-4 02/11/21 13:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	94.6	90.8	1	4.10		20

Laboratory Control Sample (LCS)

(LCS) R3621638-2 02/11/21 13:02

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	483	482	99.8	85.0-115	

Method Blank (MB)

(MB) R3621623-1 02/11/21 10:03

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) R3621623-2 02/11/21 10:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	100	100	80.0-120	
Cadmium	100	96.6	96.6	80.0-120	
Copper	100	98.3	98.3	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	100	100	80.0-120	
Selenium	100	97.3	97.3	80.0-120	
Silver	20.0	17.3	86.3	80.0-120	
Zinc	100	97.3	97.3	80.0-120	

L1315679-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315679-01 02/11/21 10:09 • (MS) R3621623-5 02/11/21 10:18 • (MSD) R3621623-6 02/11/21 10:21

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	149	254	266	105	117	1	75.0-125			4.61	20
Cadmium	100	0.517	99.0	99.5	98.5	98.9	1	75.0-125			0.481	20
Copper	100	14.5	115	114	101	99.2	1	75.0-125			1.45	20
Lead	100	9.64	111	109	101	99.1	1	75.0-125			1.78	20
Nickel	100	17.0	121	120	104	103	1	75.0-125			0.592	20
Selenium	100	2.15	99.8	100	97.7	98.0	1	75.0-125			0.364	20
Silver	20.0	U	18.0	18.2	90.1	90.9	1	75.0-125			0.902	20
Zinc	100	43.9	135	136	90.7	91.8	1	75.0-125			0.843	20

Method Blank (MB)

(MB) R3621669-1 02/11/21 10:35

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

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

(LCS) R3621669-2 02/11/21 10:38 • (LCSD) R3621669-3 02/11/21 10:40

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 %
Hot Water Sol. Boron	1.00	0.977	1.02	97.7	102	80.0-120			3.98	20

Method Blank (MB)

(MB) R3621581-1 02/11/21 10:18

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) R3621581-2 02/11/21 10:21

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

L1315679-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315679-01 02/11/21 10:24 • (MS) R3621581-5 02/11/21 10:34 • (MSD) R3621581-6 02/11/21 10:38

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 %
Arsenic	20.0	12.0	113	107	101	94.9	5	75.0-125			5.31	20

Method Blank (MB)

(MB) R3621828-2 02/11/21 11:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*98.4*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3621828-1 02/11/21 11:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.73	86.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*105*	*77.0-120*	

L1315630-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315630-01 02/11/21 13:12 • (MS) R3621828-3 02/11/21 19:47 • (MSD) R3621828-4 02/11/21 20:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	81.4	4.83	91.4	100	106	117	25	10.0-151			8.99	28
(S) a,a,a-Trifluorotoluene(FID)					*100*	*101*		*77.0-120*				

Method Blank (MB)

(MB) R3621887-2 02/11/21 22:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*96.6*			*75.0-131*
(S) 4-Bromofluorobenzene	*102*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.4*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3621887-1 02/11/21 21:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.139	111	70.0-123	
Ethylbenzene	0.125	0.130	104	74.0-126	
Toluene	0.125	0.124	99.2	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.123	98.4	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.123	98.4	73.0-127	
Xylenes, Total	0.375	0.400	107	72.0-127	
(S) Toluene-d8			*91.6*	*75.0-131*	
(S) 4-Bromofluorobenzene			*108*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*105*	*70.0-130*	

Method Blank (MB)

(MB) R3621862-1 02/11/21 12:32

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	*57.1*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3621862-2 02/11/21 12:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	49.8	99.6	50.0-150	
(S) o-Terphenyl			*68.0*	*18.0-148*	

L1315687-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315687-12 02/11/21 12:58 • (MS) R3621862-3 02/11/21 13:11 • (MSD) R3621862-4 02/11/21 13:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.0	U	49.1	41.7	100	83.4	1	50.0-150			16.3	20
(S) o-Terphenyl					*61.5*	*55.4*		*18.0-148*				

Method Blank (MB)

(MB) R3621824-2 02/11/21 08:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*83.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*97.5*			*34.0-125*
(S) p-Terphenyl-d14	*112*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3621824-1 02/11/21 08:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0711	88.9	50.0-126	
Acenaphthene	0.0800	0.0707	88.4	50.0-120	
Acenaphthylene	0.0800	0.0757	94.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0712	89.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0588	73.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0664	83.0	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0691	86.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0666	83.3	49.0-125	
Chrysene	0.0800	0.0716	89.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0715	89.4	47.0-125	
Fluoranthene	0.0800	0.0731	91.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3621824-1 02/11/21 08:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0770	96.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0714	89.3	46.0-125	
Naphthalene	0.0800	0.0694	86.8	50.0-120	
Phenanthrene	0.0800	0.0703	87.9	47.0-120	
Pyrene	0.0800	0.0700	87.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0733	91.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0697	87.1	50.0-120	
2-Chloronaphthalene	0.0800	0.0729	91.1	50.0-120	
(S) Nitrobenzene-d5			*87.5*	*14.0-149*	
(S) 2-Fluorobiphenyl			*98.4*	*34.0-125*	
(S) p-Terphenyl-d14			*109*	*23.0-120*	

L1314709-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314709-06 02/11/21 13:29 • (MS) R3621824-3 02/11/21 13:49 • (MSD) R3621824-4 02/11/21 14:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0792	U	0.0637	0.0569	80.4	71.8	1	10.0-145			11.3	30
Acenaphthene	0.0792	U	0.0635	0.0575	80.2	72.6	1	14.0-127			9.92	27
Acenaphthylene	0.0792	U	0.0687	0.0620	86.7	78.3	1	21.0-124			10.3	25
Benzo(a)anthracene	0.0792	0.00390	0.0667	0.0596	79.3	70.3	1	10.0-139			11.2	30
Benzo(a)pyrene	0.0792	0.00332	0.0610	0.0552	72.8	65.5	1	10.0-141			9.98	31
Benzo(b)fluoranthene	0.0792	0.00439	0.0603	0.0537	70.6	62.3	1	10.0-140			11.6	36
Benzo(g,h,i)perylene	0.0792	0.00250	0.0602	0.0542	72.9	65.3	1	10.0-140			10.5	33
Benzo(k)fluoranthene	0.0792	U	0.0592	0.0541	74.7	68.3	1	10.0-137			9.00	31
Chrysene	0.0792	0.00359	0.0668	0.0613	79.8	72.9	1	10.0-145			8.59	30
Dibenz(a,h)anthracene	0.0792	U	0.0600	0.0553	75.8	69.8	1	10.0-132			8.15	31
Fluoranthene	0.0792	0.00652	0.0701	0.0631	80.3	71.4	1	10.0-153			10.5	33
Fluorene	0.0792	U	0.0691	0.0620	87.2	78.3	1	11.0-130			10.8	29
Indeno(1,2,3-cd)pyrene	0.0792	0.00311	0.0627	0.0559	75.2	66.7	1	10.0-137			11.5	32
Naphthalene	0.0792	U	0.0638	0.0564	80.6	71.2	1	10.0-135			12.3	27
Phenanthrene	0.0792	U	0.0641	0.0580	80.9	73.2	1	10.0-144			9.99	31
Pyrene	0.0792	0.00675	0.0669	0.0606	75.9	68.0	1	10.0-148			9.88	35
1-Methylnaphthalene	0.0792	U	0.0684	0.0596	86.4	75.3	1	10.0-142			13.8	28
2-Methylnaphthalene	0.0792	U	0.0653	0.0573	82.4	72.3	1	10.0-137			13.1	28
2-Chloronaphthalene	0.0792	U	0.0646	0.0586	81.6	74.0	1	29.0-120			9.74	24
(S) Nitrobenzene-d5					*76.6*	*68.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*85.5*	*78.8*		*34.0-125*				
(S) p-Terphenyl-d14					*91.8*	*90.0*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.

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* 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 National.

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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
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A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
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EPA–Crypto	TN00003		

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ANSI National Accreditation Board	L2239

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

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

Billing Information: **Same as above**

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

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

Project Description: **J17E Dumpline Release**

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

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Dustin Hino

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: ~~Standard TAT~~

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR , EC, pH, Boron	TABLE 915-1- Metals	Remarks	Sample # (lab only)
20210209-J17E (WEST) @ 3'	Grab	SS		2/9/2021	1000	2	+	+	+	+	+		01

Analysis / Container / Preservative

Pres Chk

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L # 1715679

Table E049

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

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

Tracking # 1676 2750 4895

Sample Receipt Checklist
COC Seal Present/Intact: ✓NP __Y __N
COC Signed/Accurate: ~~__Y~~ __N
Bottles arrive intact: ~~__Y~~ __N
Correct bottles used: ~~__Y~~ __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

	Date:	Time:		
Relinquished by : (Signature)	2/9/2021	1745	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Relinquished by : (Signature)	2/9/21	1745	Received by: (Signature)	Temp: 0.2°C Bottles Received: 2
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Caleb Compton	Date: 2/10/21 Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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ANALYTICAL REPORT

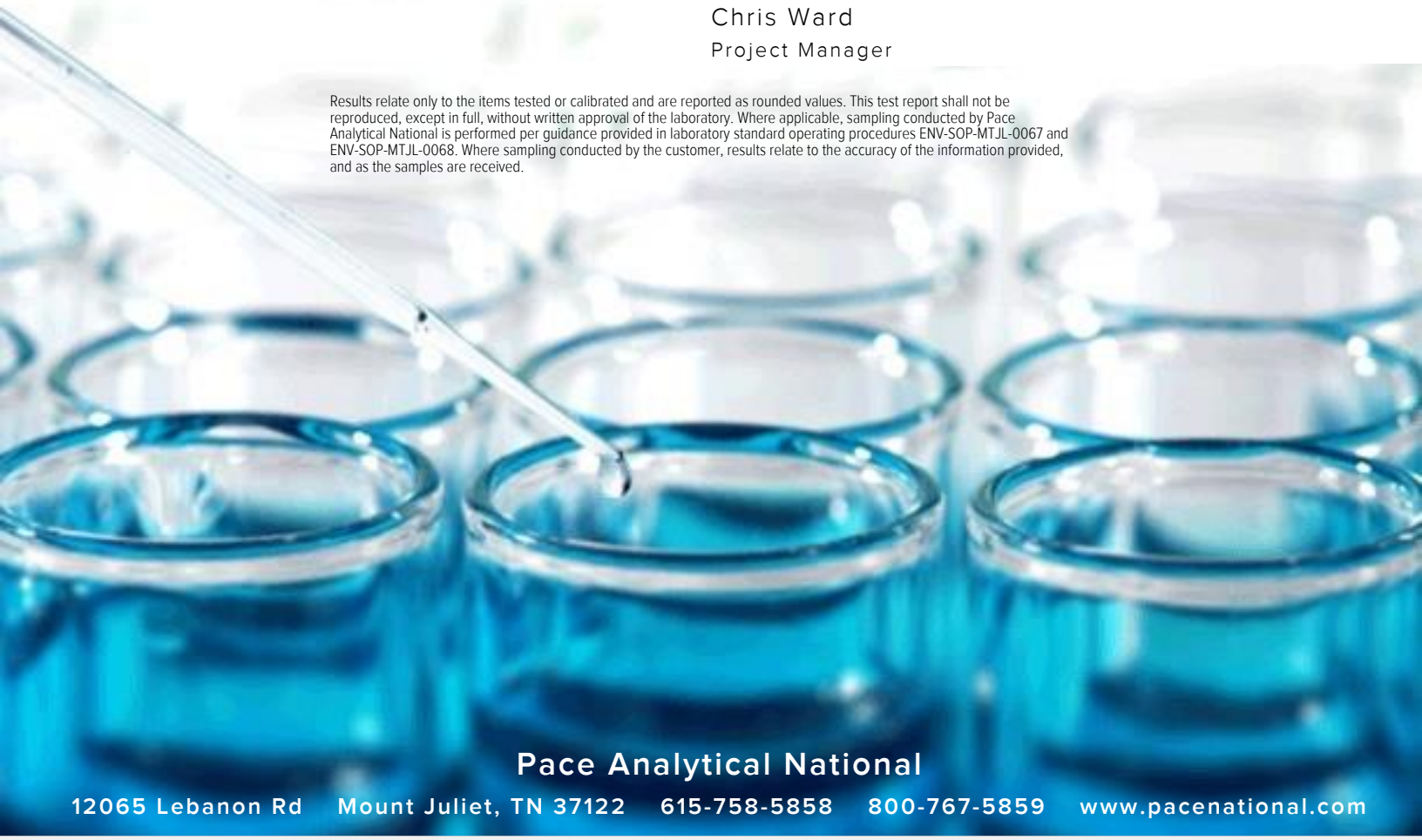
February 12, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1315686
Samples Received:	02/10/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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20210209-J17E (WEST) @11' L1315686-01 Solid

Collected by: Evan Mason
Collected date/time: 02/08/21 14:00
Received date/time: 02/10/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1619782	1	02/12/21 07:42	02/12/21 07:42	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1619374	1	02/11/21 18:52	02/12/21 02:06	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1620297	1	02/12/21 11:40	02/12/21 14:00	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1619890	1	02/11/21 09:47	02/11/21 13:02	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1619678	1	02/10/21 22:23	02/11/21 10:24	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1619571	1	02/10/21 17:15	02/11/21 11:23	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1619679	5	02/10/21 22:22	02/11/21 10:41	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1619874	200	02/11/21 08:43	02/11/21 12:24	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1619839	20	02/11/21 08:43	02/12/21 05:16	GLN	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1619660	20	02/11/21 00:56	02/12/21 03:39	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1619417	1	02/11/21 00:12	02/11/21 13:10	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1619417	20	02/11/21 00:12	02/11/21 17:01	LEA	Mt. Juliet, TN

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	5.11		1	02/12/2021 07:42	WG1619782

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/12/2021 02:06	WG1619374

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.37	T8	1	02/12/2021 14:00	WG1620297

Sample Narrative:

L1315686-01 WG1620297: 9.37 at 19.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	304		10.0	1	02/11/2021 13:02	WG1619890

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	246		0.0852	0.500	1	02/11/2021 10:24	WG1619678
Cadmium	0.373	J	0.0471	0.500	1	02/11/2021 10:24	WG1619678
Copper	21.0		0.400	2.00	1	02/11/2021 10:24	WG1619678
Lead	9.62		0.208	0.500	1	02/11/2021 10:24	WG1619678
Nickel	31.5		0.132	2.00	1	02/11/2021 10:24	WG1619678
Selenium	1.20	J	0.764	2.00	1	02/11/2021 10:24	WG1619678
Silver	U		0.127	1.00	1	02/11/2021 10:24	WG1619678
Zinc	52.9		0.832	5.00	1	02/11/2021 10:24	WG1619678

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.119	J	0.0167	0.200	1	02/11/2021 11:23	WG1619571

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	22.4		0.100	1.00	5	02/11/2021 10:41	WG1619679

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	728		4.34	20.0	200	02/11/2021 12:24	WG1619874
(S) a,a,a-Trifluorotoluene(FID)	*113*			*77.0-120*		*02/11/2021 12:24*	WG1619874

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0100	J	0.00934	0.0200	20	02/12/2021 05:16	WG1619839
Toluene	U		0.0260	0.100	20	02/12/2021 05:16	WG1619839
Ethylbenzene	2.33		0.0147	0.0500	20	02/12/2021 05:16	WG1619839
Xylenes, Total	42.5		0.0176	0.130	20	02/12/2021 05:16	WG1619839
1,2,4-Trimethylbenzene	23.9		0.0316	0.100	20	02/12/2021 05:16	WG1619839
1,3,5-Trimethylbenzene	21.3		0.0400	0.100	20	02/12/2021 05:16	WG1619839
(S) Toluene-d8	*91.8*			*75.0-131*		*02/12/2021 05:16*	WG1619839
(S) 4-Bromofluorobenzene	*137*			*67.0-138*		*02/12/2021 05:16*	WG1619839
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*02/12/2021 05:16*	WG1619839

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1530		32.2	80.0	20	02/12/2021 03:39	WG1619660
C28-C36 Motor Oil Range	371		5.48	80.0	20	02/12/2021 03:39	WG1619660
(S) o-Terphenyl	*0.000*	J7		*18.0-148*		*02/12/2021 03:39*	WG1619660

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.212		0.00230	0.00600	1	02/11/2021 13:10	WG1619417
Acenaphthene	0.144		0.00209	0.00600	1	02/11/2021 13:10	WG1619417
Acenaphthylene	0.0266		0.00216	0.00600	1	02/11/2021 13:10	WG1619417
Benzo(a)anthracene	0.00347	J	0.00173	0.00600	1	02/11/2021 13:10	WG1619417
Benzo(a)pyrene	U		0.00179	0.00600	1	02/11/2021 13:10	WG1619417
Benzo(b)fluoranthene	0.00908		0.00153	0.00600	1	02/11/2021 13:10	WG1619417
Benzo(g,h,i)perylene	0.00263	J	0.00177	0.00600	1	02/11/2021 13:10	WG1619417
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/11/2021 13:10	WG1619417
Chrysene	0.0231		0.00232	0.00600	1	02/11/2021 13:10	WG1619417
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/11/2021 13:10	WG1619417
Fluoranthene	0.0369		0.00227	0.00600	1	02/11/2021 13:10	WG1619417
Fluorene	0.648		0.00205	0.00600	1	02/11/2021 13:10	WG1619417
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/11/2021 13:10	WG1619417
Naphthalene	2.59		0.00408	0.0200	1	02/11/2021 13:10	WG1619417
Phenanthrene	0.550		0.00231	0.00600	1	02/11/2021 13:10	WG1619417
Pyrene	0.0213		0.00200	0.00600	1	02/11/2021 13:10	WG1619417
1-Methylnaphthalene	3.46		0.00449	0.0200	1	02/11/2021 13:10	WG1619417
2-Methylnaphthalene	5.15		0.0854	0.400	20	02/11/2021 17:01	WG1619417
2-Chloronaphthalene	0.00589	J	0.00466	0.0200	1	02/11/2021 13:10	WG1619417
(S) p-Terphenyl-d14	*91.8*	J7		*23.0-120*		*02/11/2021 17:01*	WG1619417
(S) p-Terphenyl-d14	*114*			*23.0-120*		*02/11/2021 13:10*	WG1619417
(S) Nitrobenzene-d5	*1150*	J7		*14.0-149*		*02/11/2021 17:01*	WG1619417
(S) Nitrobenzene-d5	*1860*	J1		*14.0-149*		*02/11/2021 13:10*	WG1619417
(S) 2-Fluorobiphenyl	*79.4*	J7		*34.0-125*		*02/11/2021 17:01*	WG1619417
(S) 2-Fluorobiphenyl	*135*	J1		*34.0-125*		*02/11/2021 13:10*	WG1619417

Method Blank (MB)

(MB) R3622085-1 02/11/21 23:02

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

L1314315-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1314315-01 02/11/21 23:44 • (DUP) R3622085-3 02/11/21 23:51

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

L1316225-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1316225-01 02/12/21 01:20 • (DUP) R3622085-4 02/12/21 01:25

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.678	0.655	1	3.48	J	20

Laboratory Control Sample (LCS)

(LCS) R3622085-2 02/11/21 23:09

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

L1315679-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315679-01 02/12/21 01:40 • (MS) R3622085-5 02/12/21 01:46 • (MSD) R3622085-6 02/12/21 01:51

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 %
Hexavalent Chromium	20.0	U	13.4	13.4	67.1	67.2	1	75.0-125	J6	J6	0.0717	20

L1315679-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1315679-01 02/12/21 01:40 • (MS) R3622085-7 02/12/21 01:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	1030	U	820	79.6	50	75.0-125	

L1315630-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1315630-07 02/12/21 14:00 • (DUP) R3622096-2 02/12/21 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.71	8.71	1	0.000		1

Sample Narrative:

OS: 8.71 at 20.2C

DUP: 8.71 at 19.8C

L1315779-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315779-01 02/12/21 14:00 • (DUP) R3622096-3 02/12/21 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.33	8.32	1	0.120		1

Sample Narrative:

OS: 8.33 at 19.2C

DUP: 8.32 at 19.1C

Laboratory Control Sample (LCS)

(LCS) R3622096-1 02/12/21 14:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.07 at 19.4C

Method Blank (MB)

(MB) R3621638-1 02/11/21 13:02

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

L1315171-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315171-01 02/11/21 13:02 • (DUP) R3621638-3 02/11/21 13:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	665	653	1	1.82		20

L1315648-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1315648-01 02/11/21 13:02 • (DUP) R3621638-4 02/11/21 13:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	94.6	90.8	1	4.10		20

Laboratory Control Sample (LCS)

(LCS) R3621638-2 02/11/21 13:02

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	483	482	99.8	85.0-115	

Method Blank (MB)

(MB) R3621623-1 02/11/21 10:03

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) R3621623-2 02/11/21 10:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	100	100	80.0-120	
Cadmium	100	96.6	96.6	80.0-120	
Copper	100	98.3	98.3	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	100	100	80.0-120	
Selenium	100	97.3	97.3	80.0-120	
Silver	20.0	17.3	86.3	80.0-120	
Zinc	100	97.3	97.3	80.0-120	

L1315679-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315679-01 02/11/21 10:09 • (MS) R3621623-5 02/11/21 10:18 • (MSD) R3621623-6 02/11/21 10:21

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	149	254	266	105	117	1	75.0-125			4.61	20
Cadmium	100	0.517	99.0	99.5	98.5	98.9	1	75.0-125			0.481	20
Copper	100	14.5	115	114	101	99.2	1	75.0-125			1.45	20
Lead	100	9.64	111	109	101	99.1	1	75.0-125			1.78	20
Nickel	100	17.0	121	120	104	103	1	75.0-125			0.592	20
Selenium	100	2.15	99.8	100	97.7	98.0	1	75.0-125			0.364	20
Silver	20.0	U	18.0	18.2	90.1	90.9	1	75.0-125			0.902	20
Zinc	100	43.9	135	136	90.7	91.8	1	75.0-125			0.843	20

Method Blank (MB)

(MB) R3621669-1 02/11/21 10:35

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

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

(LCS) R3621669-2 02/11/21 10:38 • (LCSD) R3621669-3 02/11/21 10:40

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 %
Hot Water Sol. Boron	1.00	0.977	1.02	97.7	102	80.0-120			3.98	20

Method Blank (MB)

(MB) R3621581-1 02/11/21 10:18

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) R3621581-2 02/11/21 10:21

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

L1315679-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315679-01 02/11/21 10:24 • (MS) R3621581-5 02/11/21 10:34 • (MSD) R3621581-6 02/11/21 10:38

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 %
Arsenic	20.0	12.0	113	107	101	94.9	5	75.0-125			5.31	20

Method Blank (MB)

(MB) R3621832-3 02/11/21 11:18

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)	*116*			*77.0-120*

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

(LCS) R3621832-1 02/11/21 10:00 • (LCSD) R3621832-2 02/11/21 10:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.09	5.73	92.5	104	72.0-127			11.8	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*102*	*77.0-120*				

L1314775-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314775-01 02/11/21 13:08 • (MS) R3621832-4 02/11/21 19:48 • (MSD) R3621832-5 02/11/21 20:10

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 %
TPH (GC/FID) Low Fraction	138	0.570	156	193	113	139	25	10.0-151			21.2	28
(S) a,a,a-Trifluorotoluene(FID)					*110*	*117*		*77.0-120*				

Method Blank (MB)

(MB) R3621887-2 02/11/21 22:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*96.6*			*75.0-131*
(S) 4-Bromofluorobenzene	*102*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.4*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3621887-1 02/11/21 21:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.139	111	70.0-123	
Ethylbenzene	0.125	0.130	104	74.0-126	
Toluene	0.125	0.124	99.2	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.123	98.4	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.123	98.4	73.0-127	
Xylenes, Total	0.375	0.400	107	72.0-127	
(S) Toluene-d8			*91.6*	*75.0-131*	
(S) 4-Bromofluorobenzene			*108*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*105*	*70.0-130*	

Method Blank (MB)

(MB) R3621862-1 02/11/21 12:32

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	*57.1*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3621862-2 02/11/21 12:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	49.8	99.6	50.0-150	
(S) o-Terphenyl			*68.0*	*18.0-148*	

L1315687-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315687-12 02/11/21 12:58 • (MS) R3621862-3 02/11/21 13:11 • (MSD) R3621862-4 02/11/21 13:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.0	U	49.1	41.7	100	83.4	1	50.0-150			16.3	20
(S) o-Terphenyl					*61.5*	*55.4*		*18.0-148*				

Method Blank (MB)

(MB) R3621824-2 02/11/21 08:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*83.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*97.5*			*34.0-125*
(S) p-Terphenyl-d14	*112*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3621824-1 02/11/21 08:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0711	88.9	50.0-126	
Acenaphthene	0.0800	0.0707	88.4	50.0-120	
Acenaphthylene	0.0800	0.0757	94.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0712	89.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0588	73.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0664	83.0	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0691	86.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0666	83.3	49.0-125	
Chrysene	0.0800	0.0716	89.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0715	89.4	47.0-125	
Fluoranthene	0.0800	0.0731	91.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3621824-1 02/11/21 08:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0770	96.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0714	89.3	46.0-125	
Naphthalene	0.0800	0.0694	86.8	50.0-120	
Phenanthrene	0.0800	0.0703	87.9	47.0-120	
Pyrene	0.0800	0.0700	87.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0733	91.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0697	87.1	50.0-120	
2-Chloronaphthalene	0.0800	0.0729	91.1	50.0-120	
(S) Nitrobenzene-d5			*87.5*	*14.0-149*	
(S) 2-Fluorobiphenyl			*98.4*	*34.0-125*	
(S) p-Terphenyl-d14			*109*	*23.0-120*	

L1314709-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314709-06 02/11/21 13:29 • (MS) R3621824-3 02/11/21 13:49 • (MSD) R3621824-4 02/11/21 14:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0792	U	0.0637	0.0569	80.4	71.8	1	10.0-145			11.3	30
Acenaphthene	0.0792	U	0.0635	0.0575	80.2	72.6	1	14.0-127			9.92	27
Acenaphthylene	0.0792	U	0.0687	0.0620	86.7	78.3	1	21.0-124			10.3	25
Benzo(a)anthracene	0.0792	0.00390	0.0667	0.0596	79.3	70.3	1	10.0-139			11.2	30
Benzo(a)pyrene	0.0792	0.00332	0.0610	0.0552	72.8	65.5	1	10.0-141			9.98	31
Benzo(b)fluoranthene	0.0792	0.00439	0.0603	0.0537	70.6	62.3	1	10.0-140			11.6	36
Benzo(g,h,i)perylene	0.0792	0.00250	0.0602	0.0542	72.9	65.3	1	10.0-140			10.5	33
Benzo(k)fluoranthene	0.0792	U	0.0592	0.0541	74.7	68.3	1	10.0-137			9.00	31
Chrysene	0.0792	0.00359	0.0668	0.0613	79.8	72.9	1	10.0-145			8.59	30
Dibenz(a,h)anthracene	0.0792	U	0.0600	0.0553	75.8	69.8	1	10.0-132			8.15	31
Fluoranthene	0.0792	0.00652	0.0701	0.0631	80.3	71.4	1	10.0-153			10.5	33
Fluorene	0.0792	U	0.0691	0.0620	87.2	78.3	1	11.0-130			10.8	29
Indeno(1,2,3-cd)pyrene	0.0792	0.00311	0.0627	0.0559	75.2	66.7	1	10.0-137			11.5	32
Naphthalene	0.0792	U	0.0638	0.0564	80.6	71.2	1	10.0-135			12.3	27
Phenanthrene	0.0792	U	0.0641	0.0580	80.9	73.2	1	10.0-144			9.99	31
Pyrene	0.0792	0.00675	0.0669	0.0606	75.9	68.0	1	10.0-148			9.88	35
1-Methylnaphthalene	0.0792	U	0.0684	0.0596	86.4	75.3	1	10.0-142			13.8	28
2-Methylnaphthalene	0.0792	U	0.0653	0.0573	82.4	72.3	1	10.0-137			13.1	28
2-Chloronaphthalene	0.0792	U	0.0646	0.0586	81.6	74.0	1	29.0-120			9.74	24
(S) Nitrobenzene-d5					*76.6*	*68.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*85.5*	*78.8*		*34.0-125*				
(S) p-Terphenyl-d14					*91.8*	*90.0*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* 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 National.

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	LAO00356
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		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr. Ste. C Sacramento, CA, 95811

California	2961	Oregon	CA300002
Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

Pace Analytical National 6000 South Eastern Avenue Ste 9A Las Vegas, NV, 89119

Nevada	NV009412021-1

Pace Analytical National 1606 E. Brazos Street Suite D Victoria, TX, 77901

Texas	T104704328-20-18

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

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

Billing Information: **Same as above**

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

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

Project Description: **J17E Dumpline Release**

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

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Evan Mason

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature): Sing for Em

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: ~~Standard TAT~~

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 1315686

Table # E048

Acct.

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Pres Chk	TPH- GRO,DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR, EC, pH, Boron	TABLE 915-1- Metals	Remarks	Sample # (lab only)
20210208-J17E (West)e11	Grab	SS		2/8/2021	1400	2		X	X	X	X	X		-01

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

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

Tracking # 1676 2750 4895

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	2/9/21	1445		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.3 °C Bottles Received: 2
	2/9/21	1700		
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/10/21 Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

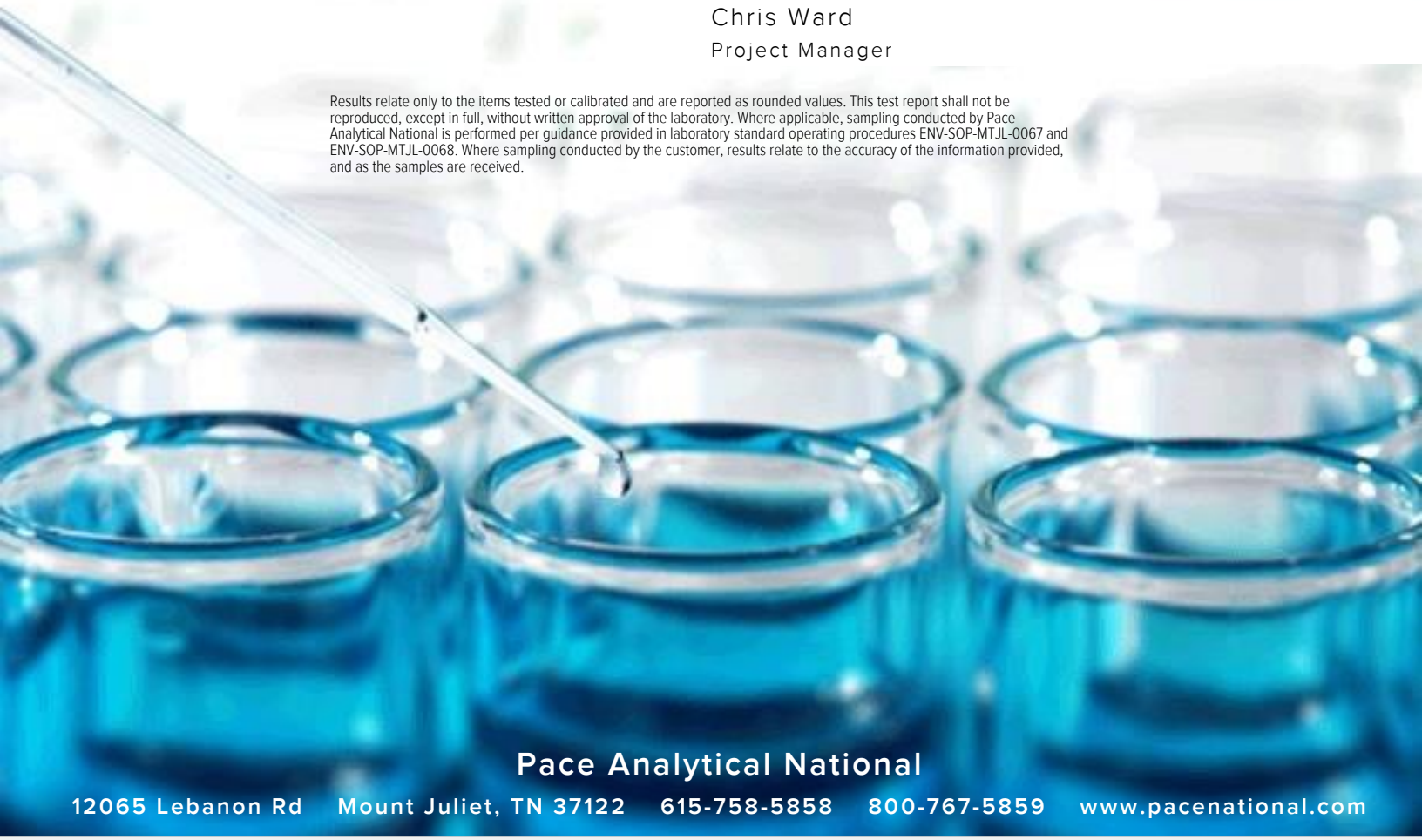
February 17, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1316508
Samples Received:	02/12/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210209-J17E(NORTH)@9' L1316508-01 Solid

Collected by: DH | Collected date/time: 02/09/21 11:15 | Received date/time: 02/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1620689	1	02/16/21 10:23	02/16/21 10:23	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1620823	1	02/14/21 10:30	02/14/21 19:35	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1621211	1	02/14/21 09:00	02/17/21 10:37	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1621074	1	02/13/21 09:51	02/13/21 12:00	SRG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1620771	1	02/16/21 14:13	02/16/21 16:11	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1619591	1	02/12/21 12:45	02/16/21 12:01	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1620773	5	02/16/21 14:15	02/17/21 09:37	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1620966	1	02/12/21 17:38	02/13/21 02:43	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1621085	1	02/12/21 17:38	02/13/21 11:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1620091	1	02/12/21 16:32	02/13/21 03:29	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1620656	1	02/12/21 14:56	02/13/21 01:07	JNJ	Mt. Juliet, TN

20210209-J17E(NORTH)@31' L1316508-02 Solid

Collected by: DH | Collected date/time: 02/09/21 14:50 | Received date/time: 02/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1620689	1	02/16/21 10:26	02/16/21 10:26	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1620823	1	02/14/21 10:30	02/14/21 19:40	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1621211	1	02/14/21 09:00	02/17/21 10:37	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1621074	1	02/13/21 09:51	02/13/21 12:00	SRG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1620771	1	02/16/21 14:13	02/16/21 16:15	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1619591	1	02/12/21 12:45	02/16/21 12:03	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1620773	5	02/16/21 14:15	02/17/21 09:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1620966	1	02/12/21 17:38	02/13/21 03:04	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1621085	1	02/12/21 17:38	02/13/21 11:47	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1620091	1	02/12/21 16:32	02/13/21 03:02	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1620656	1	02/12/21 14:56	02/13/21 01:25	JNJ	Mt. Juliet, TN

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	2.03		1	02/16/2021 10:23	WG1620689

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/14/2021 19:35	WG1620823

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.57	T8	1	02/17/2021 10:37	WG1621211

Sample Narrative:
L1316508-01 WG1621211: 8.57 at 18C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	401		10.0	1	02/13/2021 12:00	WG1621074

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	155		0.0852	0.500	1	02/16/2021 16:11	WG1620771
Cadmium	0.292	J	0.0471	0.500	1	02/16/2021 16:11	WG1620771
Copper	11.0		0.400	2.00	1	02/16/2021 16:11	WG1620771
Lead	8.71		0.208	0.500	1	02/16/2021 16:11	WG1620771
Nickel	15.7		0.132	2.00	1	02/16/2021 16:11	WG1620771
Selenium	U		0.764	2.00	1	02/16/2021 16:11	WG1620771
Silver	U		0.127	1.00	1	02/16/2021 16:11	WG1620771
Zinc	36.1		0.832	5.00	1	02/16/2021 16:11	WG1620771

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.190	J	0.0167	0.200	1	02/16/2021 12:01	WG1619591

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.66		0.100	1.00	5	02/17/2021 09:37	WG1620773

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	8.92		0.0217	0.100	1	02/13/2021 02:43	WG1620966
(S) a,a,a-Trifluorotoluene(FID)	*87.9*			*77.0-120*		*02/13/2021 02:43*	WG1620966

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	02/13/2021 11:29	WG1621085
Toluene	U		0.00130	0.00500	1	02/13/2021 11:29	WG1621085
Ethylbenzene	U		0.000737	0.00250	1	02/13/2021 11:29	WG1621085
Xylenes, Total	0.379		0.000880	0.00650	1	02/13/2021 11:29	WG1621085
1,2,4-Trimethylbenzene	0.287		0.00158	0.00500	1	02/13/2021 11:29	WG1621085
1,3,5-Trimethylbenzene	0.522		0.00200	0.00500	1	02/13/2021 11:29	WG1621085
(S) Toluene-d8	*99.3*			*75.0-131*		*02/13/2021 11:29*	WG1621085
(S) 4-Bromofluorobenzene	*99.9*			*67.0-138*		*02/13/2021 11:29*	WG1621085
(S) 1,2-Dichloroethane-d4	*82.6*			*70.0-130*		*02/13/2021 11:29*	WG1621085

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	216		1.61	4.00	1	02/13/2021 03:29	WG1620091
C28-C36 Motor Oil Range	86.6		0.274	4.00	1	02/13/2021 03:29	WG1620091
(S) o-Terphenyl	*52.3*			*18.0-148*		*02/13/2021 03:29*	WG1620091

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	02/13/2021 01:07	WG1620656
Acenaphthene	U		0.00209	0.00600	1	02/13/2021 01:07	WG1620656
Acenaphthylene	U		0.00216	0.00600	1	02/13/2021 01:07	WG1620656
Benzo(a)anthracene	U		0.00173	0.00600	1	02/13/2021 01:07	WG1620656
Benzo(a)pyrene	U		0.00179	0.00600	1	02/13/2021 01:07	WG1620656
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/13/2021 01:07	WG1620656
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/13/2021 01:07	WG1620656
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/13/2021 01:07	WG1620656
Chrysene	U		0.00232	0.00600	1	02/13/2021 01:07	WG1620656
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/13/2021 01:07	WG1620656
Fluoranthene	U		0.00227	0.00600	1	02/13/2021 01:07	WG1620656
Fluorene	0.0296		0.00205	0.00600	1	02/13/2021 01:07	WG1620656
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/13/2021 01:07	WG1620656
Naphthalene	0.127		0.00408	0.0200	1	02/13/2021 01:07	WG1620656
Phenanthrene	0.0247		0.00231	0.00600	1	02/13/2021 01:07	WG1620656
Pyrene	U		0.00200	0.00600	1	02/13/2021 01:07	WG1620656
1-Methylnaphthalene	0.145		0.00449	0.0200	1	02/13/2021 01:07	WG1620656
2-Methylnaphthalene	0.279		0.00427	0.0200	1	02/13/2021 01:07	WG1620656
2-Chloronaphthalene	U		0.00466	0.0200	1	02/13/2021 01:07	WG1620656
(S) p-Terphenyl-d14	*80.1*			*23.0-120*		*02/13/2021 01:07*	WG1620656
(S) Nitrobenzene-d5	*0.000*	J2		*14.0-149*		*02/13/2021 01:07*	WG1620656
(S) 2-Fluorobiphenyl	*62.2*			*34.0-125*		*02/13/2021 01:07*	WG1620656

Sample Narrative:

L1316508-01 WG1620656: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.05		1	02/16/2021 10:26	WG1620689

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	02/14/2021 19:40	WG1620823

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.65	T8	1	02/17/2021 10:37	WG1621211

Sample Narrative:

L1316508-02 WG1621211: 7.65 at 18.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	250		10.0	1	02/13/2021 12:00	WG1621074

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	248		0.0852	0.500	1	02/16/2021 16:15	WG1620771
Cadmium	0.359	J	0.0471	0.500	1	02/16/2021 16:15	WG1620771
Copper	17.2		0.400	2.00	1	02/16/2021 16:15	WG1620771
Lead	6.81		0.208	0.500	1	02/16/2021 16:15	WG1620771
Nickel	16.3		0.132	2.00	1	02/16/2021 16:15	WG1620771
Selenium	1.04	J	0.764	2.00	1	02/16/2021 16:15	WG1620771
Silver	U		0.127	1.00	1	02/16/2021 16:15	WG1620771
Zinc	40.2		0.832	5.00	1	02/16/2021 16:15	WG1620771

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.189	J	0.0167	0.200	1	02/16/2021 12:03	WG1619591

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.7		0.100	1.00	5	02/17/2021 09:40	WG1620773

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.89		0.0217	0.100	1	02/13/2021 03:04	WG1620966
(S) a,a,a-Trifluorotoluene(FID)	*82.7*			*77.0-120*		*02/13/2021 03:04*	WG1620966

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	02/13/2021 11:47	WG1621085
Toluene	U		0.00130	0.00500	1	02/13/2021 11:47	WG1621085
Ethylbenzene	U		0.000737	0.00250	1	02/13/2021 11:47	WG1621085
Xylenes, Total	0.00173	J	0.000880	0.00650	1	02/13/2021 11:47	WG1621085
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	02/13/2021 11:47	WG1621085
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	02/13/2021 11:47	WG1621085
(S) Toluene-d8	*103*			*75.0-131*		*02/13/2021 11:47*	WG1621085
(S) 4-Bromofluorobenzene	*98.2*			*67.0-138*		*02/13/2021 11:47*	WG1621085
(S) 1,2-Dichloroethane-d4	*89.4*			*70.0-130*		*02/13/2021 11:47*	WG1621085

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.45		1.61	4.00	1	02/13/2021 03:02	WG1620091
C28-C36 Motor Oil Range	23.4		0.274	4.00	1	02/13/2021 03:02	WG1620091
(S) o-Terphenyl	*61.8*			*18.0-148*		*02/13/2021 03:02*	WG1620091

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	02/13/2021 01:25	WG1620656
Acenaphthene	U		0.00209	0.00600	1	02/13/2021 01:25	WG1620656
Acenaphthylene	U		0.00216	0.00600	1	02/13/2021 01:25	WG1620656
Benzo(a)anthracene	U		0.00173	0.00600	1	02/13/2021 01:25	WG1620656
Benzo(a)pyrene	U		0.00179	0.00600	1	02/13/2021 01:25	WG1620656
Benzo(b)fluoranthene	U		0.00153	0.00600	1	02/13/2021 01:25	WG1620656
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	02/13/2021 01:25	WG1620656
Benzo(k)fluoranthene	U		0.00215	0.00600	1	02/13/2021 01:25	WG1620656
Chrysene	U		0.00232	0.00600	1	02/13/2021 01:25	WG1620656
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	02/13/2021 01:25	WG1620656
Fluoranthene	U		0.00227	0.00600	1	02/13/2021 01:25	WG1620656
Fluorene	U		0.00205	0.00600	1	02/13/2021 01:25	WG1620656
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	02/13/2021 01:25	WG1620656
Naphthalene	U		0.00408	0.0200	1	02/13/2021 01:25	WG1620656
Phenanthrene	U		0.00231	0.00600	1	02/13/2021 01:25	WG1620656
Pyrene	U		0.00200	0.00600	1	02/13/2021 01:25	WG1620656
1-Methylnaphthalene	U		0.00449	0.0200	1	02/13/2021 01:25	WG1620656
2-Methylnaphthalene	U		0.00427	0.0200	1	02/13/2021 01:25	WG1620656
2-Chloronaphthalene	U		0.00466	0.0200	1	02/13/2021 01:25	WG1620656
(S) p-Terphenyl-d14	*86.9*			*23.0-120*		*02/13/2021 01:25*	WG1620656
(S) Nitrobenzene-d5	*53.7*			*14.0-149*		*02/13/2021 01:25*	WG1620656
(S) 2-Fluorobiphenyl	*58.8*			*34.0-125*		*02/13/2021 01:25*	WG1620656

Method Blank (MB)

(MB) R3622507-1 02/14/21 16:12

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

L1315820-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1315820-03 02/14/21 17:46 • (DUP) R3622507-7 02/14/21 17:51

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

L1316505-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1316505-04 02/14/21 19:24 • (DUP) R3622507-8 02/14/21 19:29

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

Laboratory Control Sample (LCS)

(LCS) R3622507-2 02/14/21 16:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.2	102	80.0-120	

L1315820-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315820-01 02/14/21 17:17 • (MS) R3622507-3 02/14/21 17:25 • (MSD) R3622507-4 02/14/21 17:30

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 %
Hexavalent Chromium	20.0	U	19.0	19.9	95.2	99.3	1	75.0-125			4.30	20

L1315820-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1315820-01 02/14/21 17:17 • (MS) R3622507-5 02/14/21 17:35

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	846	U	838	99.0	50	75.0-125	

L1315835-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1315835-02 02/17/21 10:37 • (DUP) R3622746-2 02/17/21 10:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.26	6.28	1	0.319		1

Sample Narrative:

OS: 6.26 at 18C

DUP: 6.28 at 18.1C

L1316754-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1316754-12 02/17/21 10:37 • (DUP) R3622746-3 02/17/21 10:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.67	8.71	1	0.460		1

Sample Narrative:

OS: 8.67 at 19.1C

DUP: 8.71 at 19C

Laboratory Control Sample (LCS)

(LCS) R3622746-1 02/17/21 10:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 21.2C

Method Blank (MB)

(MB) R3622257-1 02/13/21 12:00

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

L1316508-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1316508-02 02/13/21 12:00 • (DUP) R3622257-3 02/13/21 12:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	250	246	1	1.53		20

Laboratory Control Sample (LCS)

(LCS) R3622257-2 02/13/21 12:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	483	475	98.3	85.0-115	

Method Blank (MB)

(MB) R3622684-1 02/16/21 15:51

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) R3622684-2 02/16/21 15:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	108	108	80.0-120	
Cadmium	100	103	103	80.0-120	
Copper	100	106	106	80.0-120	
Lead	100	106	106	80.0-120	
Nickel	100	109	109	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	19.6	98.0	80.0-120	
Zinc	100	109	109	80.0-120	

L1316648-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316648-01 02/16/21 15:57 • (MS) R3622684-5 02/16/21 16:05 • (MSD) R3622684-6 02/16/21 16:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	52.6	134	122	81.4	69.1	1	75.0-125		J6	9.57	20
Cadmium	100	0.208	89.3	90.5	89.1	90.3	1	75.0-125			1.32	20
Copper	100	39.1	156	3670	117	3630	1	75.0-125		J3 J5	184	20
Lead	100	30.1	101	99.5	71.1	69.3	1	75.0-125	J6	J6	1.76	20
Nickel	100	14.7	110	271	95.1	256	1	75.0-125		J3 J5	84.6	20
Selenium	100	U	92.1	90.1	92.1	90.1	1	75.0-125			2.23	20
Silver	20.0	U	16.8	16.1	84.1	80.6	1	75.0-125			4.33	20
Zinc	100	41.4	133	185	91.2	144	1	75.0-125		J3 J5	33.1	20

Method Blank (MB)

(MB) R3622616-1 02/16/21 11:43

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

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

(LCS) R3622616-2 02/16/21 11:45 • (LCSD) R3622616-3 02/16/21 11:47

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 %
Hot Water Sol. Boron	1.00	1.03	1.01	103	101	80.0-120			1.86	20

Method Blank (MB)

(MB) R3622726-1 02/17/21 09:14

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) R3622726-2 02/17/21 09:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.9	98.9	80.0-120	

L1316648-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316648-01 02/17/21 09:21 • (MS) R3622726-5 02/17/21 09:31 • (MSD) R3622726-6 02/17/21 09:34

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	20.0	6.30	91.8	97.5	85.5	91.2	5	75.0-125			6.01	20

Method Blank (MB)

(MB) R3622500-2 02/13/21 00:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*97.0*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3622500-1 02/13/21 00:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.49	99.8	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*111*	*77.0-120*	

L1316754-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316754-01 02/13/21 07:34 • (MS) R3622500-3 02/13/21 09:39 • (MSD) R3622500-4 02/13/21 10:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	134	9.02	76.6	78.8	50.4	52.1	25	10.0-151			2.83	28
(S) a,a,a-Trifluorotoluene(FID)					*99.4*	*102*		*77.0-120*				

Method Blank (MB)

(MB) R3622399-3 02/13/21 10:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*104*			*75.0-131*
(S) 4-Bromofluorobenzene	*99.5*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*85.8*			*70.0-130*

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

(LCS) R3622399-1 02/13/21 09:05 • (LCSD) R3622399-2 02/13/21 09:24

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	0.114	0.124	91.2	99.2	70.0-123			8.40	20
Ethylbenzene	0.125	0.115	0.119	92.0	95.2	74.0-126			3.42	20
Toluene	0.125	0.115	0.121	92.0	96.8	75.0-121			5.08	20
1,2,4-Trimethylbenzene	0.125	0.102	0.109	81.6	87.2	70.0-126			6.64	20
1,3,5-Trimethylbenzene	0.125	0.106	0.111	84.8	88.8	73.0-127			4.61	20
Xylenes, Total	0.375	0.332	0.355	88.5	94.7	72.0-127			6.70	20
(S) Toluene-d8				*102*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*99.9*	*98.8*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*95.8*	*96.8*	*70.0-130*				

L1316294-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316294-04 02/13/21 14:36 • (MS) R3622399-4 02/13/21 17:07 • (MSD) R3622399-5 02/13/21 17:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.102	0.0991	81.6	79.3	1	10.0-149			2.88	37
Ethylbenzene	0.125	U	0.102	0.101	81.6	80.8	1	10.0-160			0.985	38
Toluene	0.125	U	0.106	0.105	84.8	84.0	1	10.0-156			0.948	38
1,2,4-Trimethylbenzene	0.125	U	0.0947	0.0939	75.8	75.1	1	10.0-160			0.848	36
1,3,5-Trimethylbenzene	0.125	U	0.102	0.101	81.6	80.8	1	10.0-160			0.985	38
Xylenes, Total	0.375	0.00195	0.302	0.296	80.0	78.4	1	10.0-160			2.01	38
(S) Toluene-d8					*102*	*102*		*75.0-131*				
(S) 4-Bromofluorobenzene					*98.4*	*97.9*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*89.6*	*87.6*		*70.0-130*				

Method Blank (MB)

(MB) R3622277-1 02/12/21 23:25

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	1.72	J	0.274	4.00
(S) o-Terphenyl	*69.7*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3622277-2 02/12/21 23:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.6	75.2	50.0-150	
(S) o-Terphenyl			*94.6*	*18.0-148*	

L1314998-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314998-01 02/12/21 23:53 • (MS) R3622277-3 02/13/21 00:06 • (MSD) R3622277-4 02/13/21 00:20

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.9	U	36.9	36.9	75.5	75.0	1	50.0-150			0.000	20
(S) o-Terphenyl					*89.1*	*86.0*		*18.0-148*				

Method Blank (MB)

(MB) R3622276-2 02/12/21 20:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*51.6*			*14.0-149*
(S) 2-Fluorobiphenyl	*55.9*			*34.0-125*
(S) p-Terphenyl-d14	*82.6*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3622276-1 02/12/21 19:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0796	0.0588	73.9	50.0-126	
Acenaphthene	0.0796	0.0577	72.5	50.0-120	
Acenaphthylene	0.0796	0.0608	76.4	50.0-120	
Benzo(a)anthracene	0.0796	0.0620	77.9	45.0-120	
Benzo(a)pyrene	0.0796	0.0478	60.1	42.0-120	
Benzo(b)fluoranthene	0.0796	0.0558	70.1	42.0-121	
Benzo(g,h,i)perylene	0.0796	0.0541	68.0	45.0-125	
Benzo(k)fluoranthene	0.0796	0.0548	68.8	49.0-125	
Chrysene	0.0796	0.0568	71.4	49.0-122	
Dibenz(a,h)anthracene	0.0796	0.0618	77.6	47.0-125	
Fluoranthene	0.0796	0.0596	74.9	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3622276-1 02/12/21 19:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0796	0.0627	78.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0796	0.0616	77.4	46.0-125	
Naphthalene	0.0796	0.0564	70.9	50.0-120	
Phenanthrene	0.0796	0.0582	73.1	47.0-120	
Pyrene	0.0796	0.0544	68.3	43.0-123	
1-Methylnaphthalene	0.0796	0.0576	72.4	51.0-121	
2-Methylnaphthalene	0.0796	0.0558	70.1	50.0-120	
2-Chloronaphthalene	0.0796	0.0575	72.2	50.0-120	
(S) Nitrobenzene-d5			*77.6*	*14.0-149*	
(S) 2-Fluorobiphenyl			*77.8*	*34.0-125*	
(S) p-Terphenyl-d14			*89.9*	*23.0-120*	

L1316468-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316468-02 02/12/21 23:40 • (MS) R3622276-3 02/12/21 23:58 • (MSD) R3622276-4 02/13/21 00:15

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 %
Anthracene	0.0800	U	0.0651	0.0590	81.4	73.8	1	10.0-145			9.83	30
Acenaphthene	0.0800	U	0.580	0.562	725	703	1	14.0-127	J5	J5	3.15	27
Acenaphthylene	0.0800	U	0.278	0.275	348	344	1	21.0-124	J5	J5	1.08	25
Benzo(a)anthracene	0.0800	U	0.0641	0.0647	80.1	80.9	1	10.0-139			0.932	30
Benzo(a)pyrene	0.0800	U	0.0529	0.0558	66.1	69.8	1	10.0-141			5.34	31
Benzo(b)fluoranthene	0.0800	U	0.0479	0.0502	59.9	62.8	1	10.0-140			4.69	36
Benzo(g,h,i)perylene	0.0800	0.00338	0.0534	0.0541	62.5	63.4	1	10.0-140			1.30	33
Benzo(k)fluoranthene	0.0800	U	0.0487	0.0498	60.9	62.3	1	10.0-137			2.23	31
Chrysene	0.0800	U	0.0558	0.0565	69.8	70.6	1	10.0-145			1.25	30
Dibenz(a,h)anthracene	0.0800	U	0.0550	0.0585	68.8	73.1	1	10.0-132			6.17	31
Fluoranthene	0.0800	U	0.0573	0.0611	71.6	76.4	1	10.0-153			6.42	33
Fluorene	0.0800	U	0.782	0.683	978	854	1	11.0-130	J5	J5	13.5	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0567	0.0603	70.9	75.4	1	10.0-137			6.15	32
Naphthalene	0.0800	U	1.86	2.16	2330	2700	1	10.0-135	J5	J5	14.9	27
Phenanthrene	0.0800	0.122	0.158	0.169	45.0	58.7	1	10.0-144			6.73	31
Pyrene	0.0800	0.00761	0.0617	0.0593	67.6	64.6	1	10.0-148			3.97	35
1-Methylnaphthalene	0.0800	U	4.88	5.88	6100	7350	1	10.0-142	E J5	E J5	18.6	28
2-Methylnaphthalene	0.0800	U	5.53	6.62	6910	8280	1	10.0-137	E J5	E J5	17.9	28
2-Chloronaphthalene	0.0800	U	U	U	0.000	0.000	1	29.0-120	J6	J6	0.000	24
(S) Nitrobenzene-d5					*0.000*	*0.000*		*14.0-149*	J2	J2		
(S) 2-Fluorobiphenyl					*95.3*	*85.0*		*34.0-125*				
(S) p-Terphenyl-d14					*82.9*	*80.7*		*23.0-120*				

L1316468-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316468-02 02/12/21 23:40 • (MS) R3622276-3 02/12/21 23:58 • (MSD) R3622276-4 02/13/21 00:15

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 %

Sample Narrative:

OS: Surrogate failure due to matrix interference

L1316458-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316458-03 02/13/21 01:42 • (MS) R3622276-5 02/13/21 01:59 • (MSD) R3622276-6 02/13/21 02:17

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 %
Anthracene	0.0800	U	0.0687	0.0691	85.9	86.4	1	10.0-145			0.581	30
Acenaphthene	0.0800	0.00890	0.0713	0.0715	78.0	78.3	1	14.0-127			0.280	27
Acenaphthylene	0.0800	U	0.0707	0.0718	88.4	89.8	1	21.0-124			1.54	25
Benzo(a)anthracene	0.0800	0.0127	0.0731	0.0762	75.5	79.4	1	10.0-139			4.15	30
Benzo(a)pyrene	0.0800	0.0118	0.0643	0.0678	65.6	70.0	1	10.0-141			5.30	31
Benzo(b)fluoranthene	0.0800	0.0186	0.0622	0.0660	54.5	59.2	1	10.0-140			5.93	36
Benzo(g,h,i)perylene	0.0800	0.0116	0.0654	0.0675	67.3	69.9	1	10.0-140			3.16	33
Benzo(k)fluoranthene	0.0800	0.00640	0.0583	0.0609	64.9	68.1	1	10.0-137			4.36	31
Chrysene	0.0800	0.0129	0.0666	0.0688	67.1	69.9	1	10.0-145			3.25	30
Dibenz(a,h)anthracene	0.0800	0.00264	0.0711	0.0720	85.6	86.7	1	10.0-132			1.26	31
Fluoranthene	0.0800	0.0148	0.0698	0.0742	68.7	74.2	1	10.0-153			6.11	33
Fluorene	0.0800	0.0110	0.0786	0.0783	84.5	84.1	1	11.0-130			0.382	29
Indeno(1,2,3-cd)pyrene	0.0800	0.0150	0.0755	0.0793	75.6	80.4	1	10.0-137			4.91	32
Naphthalene	0.0800	0.0643	0.156	0.148	115	105	1	10.0-135			5.26	27
Phenanthrene	0.0800	0.00656	0.0659	0.0682	74.2	77.1	1	10.0-144			3.43	31
Pyrene	0.0800	0.0125	0.0630	0.0658	63.1	66.6	1	10.0-148			4.35	35
1-Methylnaphthalene	0.0800	0.187	0.262	0.247	93.7	75.0	1	10.0-142			5.89	28
2-Methylnaphthalene	0.0800	0.200	0.279	0.258	98.8	72.5	1	10.0-137			7.82	28
2-Chloronaphthalene	0.0800	U	0.0589	0.0596	73.6	74.5	1	29.0-120			1.18	24
(S) Nitrobenzene-d5					*36.5*	*59.7*		*14.0-149*				
(S) 2-Fluorobiphenyl					*72.1*	*71.9*		*34.0-125*				
(S) p-Terphenyl-d14					*91.8*	*88.8*		*23.0-120*				

Sample Narrative:

OS: Surrogate failure due to matrix interference

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
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.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* 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 National.

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	LAO00356
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		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr. Ste. C Sacramento, CA, 95811

California	2961	Oregon	CA300002
Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

Pace Analytical National 6000 South Eastern Avenue Ste 9A Las Vegas, NV, 89119

Nevada	NV009412021-1

Pace Analytical National 1606 E. Brazos Street Suite D Victoria, TX, 77901

Texas	T104704328-20-18

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

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

Billing Information: Same as above

Report to: bmiddleton@caerusoilandgas.com

Email To: bmiddleton@caerusoilandgas.com

Project Description: J17E Dumpline Release

City/State Collected: Mamm Creek, CO

Phone: / Fax:

Client Project #: J17E

Lab Project #: J17E

Collected by (print):

Site/Facility ID #: J17E

P.O. #: J17E

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: ~~Standard TAT~~

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 131650S
1146

Acctnum:
Template:
Prelogin:
TSR:
PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Pres Chk	TPH- GRO,DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR , EC, pH, Boron	TABLE 915-1- Metals	Remarks	Sample # (lab only)
20210209-J17E (NORTH) @9'	Grab	SS		2/9/21	1115	2		+	+	X	X	X		-01
20210209-J17E (NORTH) @ 3'	Grab	SS		2/9/21	1450	2		+	+	X	+	X		-02

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 1676 2750 5251

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	2/9/21	1600			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 26.1-0.26 °C Bottles Received: 4	
	2/10/21				
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 02/12/21 Time: 09:30	Hold: / Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

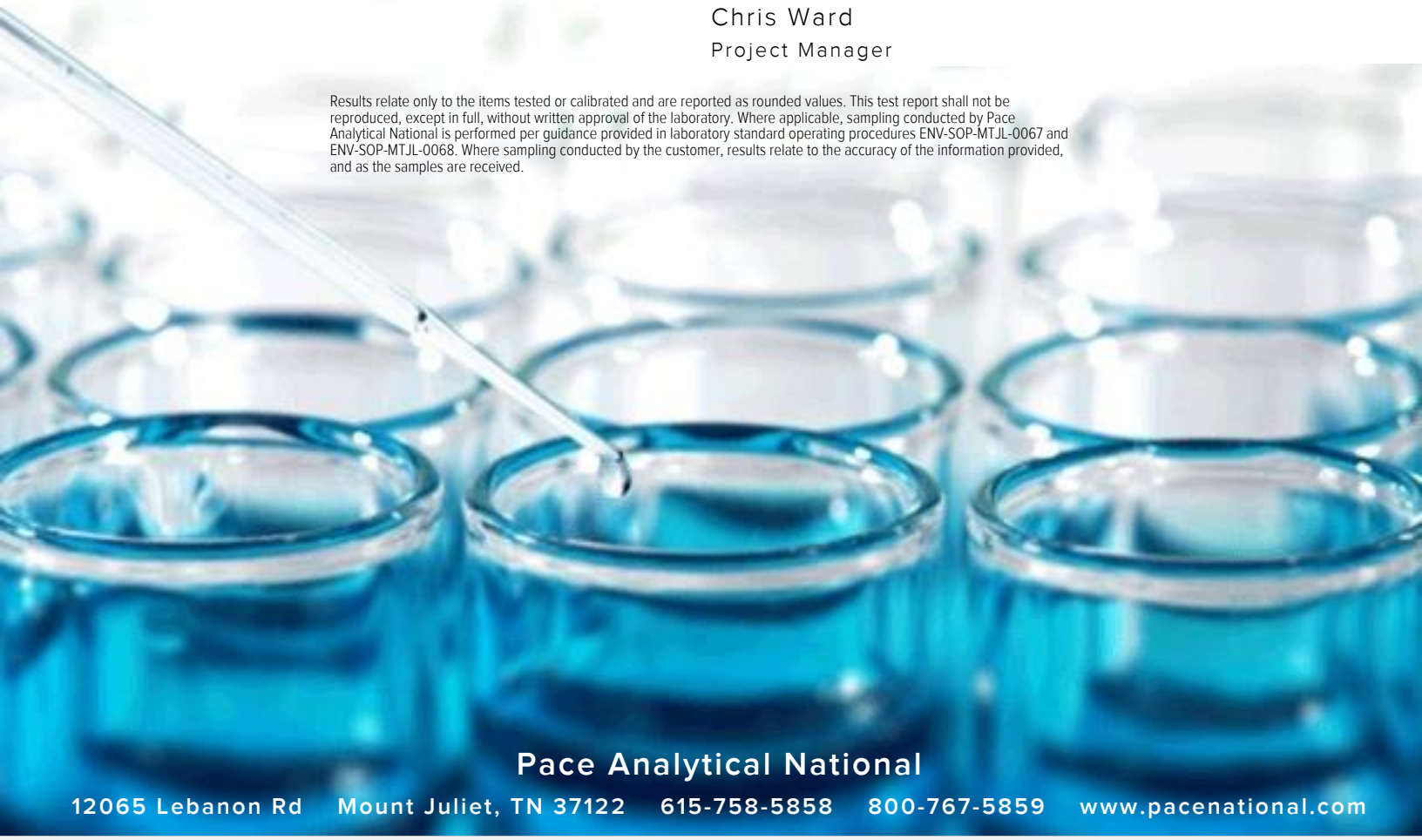
February 26, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1319322
Samples Received:	02/24/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210219-JI7E(STK 1) L1319322-01 Solid

Collected by: Evan Mason | Collected date/time: 02/19/21 11:30 | Received date/time: 02/24/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1625429	1	02/26/21 10:11	02/26/21 10:11	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1623783	1	02/25/21 18:25	02/26/21 03:12	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1625080	1	02/25/21 17:34	02/26/21 02:49	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1625953	1	02/26/21 10:12	02/26/21 13:32	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1625370	1	02/25/21 02:50	02/25/21 14:42	KMG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1625313	1	02/25/21 10:45	02/25/21 17:32	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1625371	5	02/25/21 02:49	02/25/21 11:15	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1625255	100	02/24/21 17:57	02/25/21 06:09	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1625252	8	02/24/21 17:57	02/25/21 01:12	AV	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1625284	5	02/24/21 23:19	02/25/21 19:37	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1625241	1	02/25/21 00:46	02/25/21 13:07	AAT	Mt. Juliet, TN

20210219-JI7E(STK 2) L1319322-02 Solid

Collected by: Evan Mason | Collected date/time: 02/19/21 11:45 | Received date/time: 02/24/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1625429	1	02/26/21 10:14	02/26/21 10:14	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1623783	1	02/25/21 18:25	02/26/21 03:18	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1625080	1	02/25/21 17:34	02/26/21 02:49	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1625953	1	02/26/21 10:12	02/26/21 13:32	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1625370	1	02/25/21 02:50	02/25/21 14:45	KMG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1625313	1	02/25/21 10:45	02/25/21 17:35	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1625371	5	02/25/21 02:49	02/25/21 11:18	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1625255	200	02/24/21 17:57	02/25/21 07:15	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1625252	20	02/24/21 17:57	02/25/21 01:31	AV	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1625284	1	02/24/21 23:19	02/25/21 14:14	DMG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1625284	2	02/24/21 23:19	02/25/21 22:40	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1625241	1	02/25/21 00:46	02/25/21 13:25	AAT	Mt. Juliet, TN

20210219-JI7E(STK 3) L1319322-03 Solid

Collected by: Evan Mason | Collected date/time: 02/19/21 12:00 | Received date/time: 02/24/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1625429	1	02/26/21 10:17	02/26/21 10:17	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1623783	1	02/25/21 18:25	02/26/21 03:23	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1625080	1	02/25/21 17:34	02/26/21 02:49	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1625953	1	02/26/21 10:12	02/26/21 13:32	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1625370	1	02/25/21 02:50	02/25/21 14:48	KMG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1625313	1	02/25/21 10:45	02/25/21 17:43	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1625371	5	02/25/21 02:49	02/25/21 11:22	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1625255	100	02/24/21 17:57	02/25/21 06:31	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1625252	8	02/24/21 17:57	02/25/21 01:50	AV	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1625284	1	02/24/21 23:19	02/25/21 14:27	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1625241	1	02/25/21 00:46	02/25/21 13:43	AAT	Mt. Juliet, TN

20210219-JI7E(STK 4) L1319322-04 Solid

Collected by: Evan Mason | Collected date/time: 02/19/21 12:15 | Received date/time: 02/24/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1625429	1	02/26/21 10:20	02/26/21 10:20	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1623783	1	02/25/21 18:25	02/26/21 03:28	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1625080	1	02/25/21 17:34	02/26/21 02:49	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1625953	1	02/26/21 10:12	02/26/21 13:32	AMH	Mt. Juliet, TN

20210219-JI7E(STK 4) L1319322-04 Solid

Collected by: Evan Mason
Collected date/time: 02/19/21 12:15
Received date/time: 02/24/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1625370	1	02/25/21 02:50	02/25/21 14:51	KMG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1625313	1	02/25/21 10:45	02/25/21 17:46	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1625371	5	02/25/21 02:49	02/25/21 11:25	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1625356	100	02/24/21 17:57	02/25/21 01:59	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1625252	8	02/24/21 17:57	02/25/21 02:09	AV	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1625284	1	02/24/21 23:19	02/25/21 14:41	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1625241	1	02/25/21 00:46	02/25/21 14:01	AAT	Mt. Juliet, TN

20210219-JI7E(STK 5) L1319322-05 Solid

Collected by: Evan Mason
Collected date/time: 02/19/21 12:30
Received date/time: 02/24/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1625429	1	02/26/21 09:45	02/26/21 09:45	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1623783	1	02/25/21 18:25	02/26/21 03:33	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1625080	1	02/25/21 17:34	02/26/21 02:49	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1625953	1	02/26/21 10:12	02/26/21 13:32	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1625370	1	02/25/21 02:50	02/25/21 14:08	KMG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1625313	1	02/25/21 10:45	02/25/21 17:48	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1625371	5	02/25/21 02:49	02/25/21 10:37	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1625356	100	02/24/21 17:57	02/25/21 02:20	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1625252	8	02/24/21 17:57	02/25/21 02:28	AV	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1625284	1	02/24/21 23:19	02/25/21 14:54	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1625286	1	02/25/21 01:50	02/25/21 13:57	AAT	Mt. Juliet, TN

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	6.66		1	02/26/2021 10:11	WG1625429

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/26/2021 03:12	WG1623783

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.46	T8	1	02/26/2021 02:49	WG1625080

Sample Narrative:

L1319322-01 WG1625080: 8.46 at 22.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	626		10.0	1	02/26/2021 13:32	WG1625953

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	328		0.500	1	02/25/2021 14:42	WG1625370
Cadmium	ND		0.500	1	02/25/2021 14:42	WG1625370
Copper	13.7		2.00	1	02/25/2021 14:42	WG1625370
Lead	8.58		0.500	1	02/25/2021 14:42	WG1625370
Nickel	14.2		2.00	1	02/25/2021 14:42	WG1625370
Selenium	ND		2.00	1	02/25/2021 14:42	WG1625370
Silver	ND		1.00	1	02/25/2021 14:42	WG1625370
Zinc	33.7		5.00	1	02/25/2021 14:42	WG1625370

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/25/2021 17:32	WG1625313

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.0		1.00	5	02/25/2021 11:15	WG1625371

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	347		10.0	100	02/25/2021 06:09	WG1625255
(S) a,a,a-Trifluorotoluene(FID)	*102*		*77.0-120*		*02/25/2021 06:09*	WG1625255

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00800	8	02/25/2021 01:12	WG1625252
Ethylbenzene	0.155		0.0200	8	02/25/2021 01:12	WG1625252
Toluene	0.459		0.0400	8	02/25/2021 01:12	WG1625252
1,2,4-Trimethylbenzene	3.21		0.0400	8	02/25/2021 01:12	WG1625252
1,3,5-Trimethylbenzene	3.25		0.0400	8	02/25/2021 01:12	WG1625252
Xylenes, Total	7.46		0.0520	8	02/25/2021 01:12	WG1625252
(S) Toluene-d8	*99.6*		*75.0-131*		*02/25/2021 01:12*	WG1625252
(S) 4-Bromofluorobenzene	*98.8*		*67.0-138*		*02/25/2021 01:12*	WG1625252
(S) 1,2-Dichloroethane-d4	*91.3*		*70.0-130*		*02/25/2021 01:12*	WG1625252

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	461		20.0	5	02/25/2021 19:37	WG1625284
C28-C36 Motor Oil Range	97.4		20.0	5	02/25/2021 19:37	WG1625284
(S) o-Terphenyl	*70.9*		*18.0-148*		*02/25/2021 19:37*	WG1625284

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Acenaphthene	0.0319		0.00600	1	02/25/2021 13:07	WG1625241
Acenaphthylene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Benzo(a)anthracene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Benzo(a)pyrene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Benzo(b)fluoranthene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Benzo(g,h,i)perylene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Benzo(k)fluoranthene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Chrysene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Dibenz(a,h)anthracene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Fluoranthene	0.00635		0.00600	1	02/25/2021 13:07	WG1625241
Fluorene	0.0913		0.00600	1	02/25/2021 13:07	WG1625241
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/25/2021 13:07	WG1625241
Naphthalene	0.463		0.0200	1	02/25/2021 13:07	WG1625241
Phenanthrene	0.120		0.00600	1	02/25/2021 13:07	WG1625241
Pyrene	0.00600		0.00600	1	02/25/2021 13:07	WG1625241
1-Methylnaphthalene	0.642		0.0200	1	02/25/2021 13:07	WG1625241
2-Methylnaphthalene	1.37		0.0200	1	02/25/2021 13:07	WG1625241
2-Chloronaphthalene	ND		0.0200	1	02/25/2021 13:07	WG1625241
(S) p-Terphenyl-d14	*118*		*23.0-120*		*02/25/2021 13:07*	WG1625241
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*02/25/2021 13:07*	WG1625241
(S) 2-Fluorobiphenyl	*87.0*		*34.0-125*		*02/25/2021 13:07*	WG1625241

Sample Narrative:

L1319322-01 WG1625241: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.90		1	02/26/2021 10:14	WG1625429

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/26/2021 03:18	WG1623783

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.13	T8	1	02/26/2021 02:49	WG1625080

Sample Narrative:

L1319322-02 WG1625080: 9.13 at 21.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	548		10.0	1	02/26/2021 13:32	WG1625953

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	346		0.500	1	02/25/2021 14:45	WG1625370
Cadmium	ND		0.500	1	02/25/2021 14:45	WG1625370
Copper	12.7		2.00	1	02/25/2021 14:45	WG1625370
Lead	10.7		0.500	1	02/25/2021 14:45	WG1625370
Nickel	13.4		2.00	1	02/25/2021 14:45	WG1625370
Selenium	ND		2.00	1	02/25/2021 14:45	WG1625370
Silver	ND		1.00	1	02/25/2021 14:45	WG1625370
Zinc	32.8		5.00	1	02/25/2021 14:45	WG1625370

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.223		0.200	1	02/25/2021 17:35	WG1625313

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.1		1.00	5	02/25/2021 11:18	WG1625371

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	382		20.0	200	02/25/2021 07:15	WG1625255
(S) a,a,a-Trifluorotoluene(FID)	*104*		*77.0-120*		*02/25/2021 07:15*	WG1625255

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.0200	20	02/25/2021 01:31	WG1625252
Ethylbenzene	ND		0.0500	20	02/25/2021 01:31	WG1625252
Toluene	ND		0.100	20	02/25/2021 01:31	WG1625252
1,2,4-Trimethylbenzene	3.07		0.100	20	02/25/2021 01:31	WG1625252
1,3,5-Trimethylbenzene	3.28		0.100	20	02/25/2021 01:31	WG1625252
Xylenes, Total	7.94		0.130	20	02/25/2021 01:31	WG1625252
(S) Toluene-d8	*98.5*		*75.0-131*		*02/25/2021 01:31*	WG1625252
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*02/25/2021 01:31*	WG1625252
(S) 1,2-Dichloroethane-d4	*91.3*		*70.0-130*		*02/25/2021 01:31*	WG1625252

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	405		8.00	2	02/25/2021 22:40	WG1625284
C28-C36 Motor Oil Range	111		4.00	1	02/25/2021 14:14	WG1625284
(S) o-Terphenyl	*62.5*		*18.0-148*		*02/25/2021 14:14*	WG1625284
(S) o-Terphenyl	*67.0*		*18.0-148*		*02/25/2021 22:40*	WG1625284

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Acenaphthene	0.0312		0.00600	1	02/25/2021 13:25	WG1625241
Acenaphthylene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Benzo(a)anthracene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Benzo(a)pyrene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Benzo(b)fluoranthene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Benzo(g,h,i)perylene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Benzo(k)fluoranthene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Chrysene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Dibenz(a,h)anthracene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Fluoranthene	0.00650		0.00600	1	02/25/2021 13:25	WG1625241
Fluorene	0.0893		0.00600	1	02/25/2021 13:25	WG1625241
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/25/2021 13:25	WG1625241
Naphthalene	0.475		0.0200	1	02/25/2021 13:25	WG1625241
Phenanthrene	0.116		0.00600	1	02/25/2021 13:25	WG1625241
Pyrene	0.00602		0.00600	1	02/25/2021 13:25	WG1625241
1-Methylnaphthalene	0.650		0.0200	1	02/25/2021 13:25	WG1625241
2-Methylnaphthalene	1.40		0.0200	1	02/25/2021 13:25	WG1625241
2-Chloronaphthalene	ND		0.0200	1	02/25/2021 13:25	WG1625241
(S) p-Terphenyl-d14	*114*		*23.0-120*		*02/25/2021 13:25*	WG1625241
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*02/25/2021 13:25*	WG1625241
(S) 2-Fluorobiphenyl	*89.6*		*34.0-125*		*02/25/2021 13:25*	WG1625241

Sample Narrative:

L1319322-02 WG1625241: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.69		1	02/26/2021 10:17	WG1625429

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/26/2021 03:23	WG1623783

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.19	T8	1	02/26/2021 02:49	WG1625080

Sample Narrative:

L1319322-03 WG1625080: 9.19 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	455		10.0	1	02/26/2021 13:32	WG1625953

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	252		0.500	1	02/25/2021 14:48	WG1625370
Cadmium	ND		0.500	1	02/25/2021 14:48	WG1625370
Copper	7.95		2.00	1	02/25/2021 14:48	WG1625370
Lead	8.10		0.500	1	02/25/2021 14:48	WG1625370
Nickel	9.02		2.00	1	02/25/2021 14:48	WG1625370
Selenium	ND		2.00	1	02/25/2021 14:48	WG1625370
Silver	ND		1.00	1	02/25/2021 14:48	WG1625370
Zinc	20.8		5.00	1	02/25/2021 14:48	WG1625370

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.216		0.200	1	02/25/2021 17:43	WG1625313

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.46		1.00	5	02/25/2021 11:22	WG1625371

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	263		10.0	100	02/25/2021 06:31	WG1625255
(S) a,a,a-Trifluorotoluene(FID)	*106*		*77.0-120*		*02/25/2021 06:31*	WG1625255

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00800	8	02/25/2021 01:50	WG1625252
Ethylbenzene	ND		0.0200	8	02/25/2021 01:50	WG1625252
Toluene	ND		0.0400	8	02/25/2021 01:50	WG1625252
1,2,4-Trimethylbenzene	2.26		0.0400	8	02/25/2021 01:50	WG1625252
1,3,5-Trimethylbenzene	3.30		0.0400	8	02/25/2021 01:50	WG1625252
Xylenes, Total	3.51		0.0520	8	02/25/2021 01:50	WG1625252
(S) Toluene-d8	*99.1*		*75.0-131*		*02/25/2021 01:50*	WG1625252
(S) 4-Bromofluorobenzene	*96.8*		*67.0-138*		*02/25/2021 01:50*	WG1625252
(S) 1,2-Dichloroethane-d4	*91.7*		*70.0-130*		*02/25/2021 01:50*	WG1625252

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	168		4.00	1	02/25/2021 14:27	WG1625284
C28-C36 Motor Oil Range	45.9		4.00	1	02/25/2021 14:27	WG1625284
(S) o-Terphenyl	*66.4*		*18.0-148*		*02/25/2021 14:27*	WG1625284

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Acenaphthene	0.0161		0.00600	1	02/25/2021 13:43	WG1625241
Acenaphthylene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Benzo(a)anthracene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Benzo(a)pyrene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Benzo(b)fluoranthene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Benzo(g,h,i)perylene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Benzo(k)fluoranthene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Chrysene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Dibenz(a,h)anthracene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Fluoranthene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Fluorene	0.0437		0.00600	1	02/25/2021 13:43	WG1625241
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/25/2021 13:43	WG1625241
Naphthalene	0.124		0.0200	1	02/25/2021 13:43	WG1625241
Phenanthrene	0.0526		0.00600	1	02/25/2021 13:43	WG1625241
Pyrene	ND		0.00600	1	02/25/2021 13:43	WG1625241
1-Methylnaphthalene	0.263		0.0200	1	02/25/2021 13:43	WG1625241
2-Methylnaphthalene	0.463		0.0200	1	02/25/2021 13:43	WG1625241
2-Chloronaphthalene	ND		0.0200	1	02/25/2021 13:43	WG1625241
(S) p-Terphenyl-d14	*108*		*23.0-120*		*02/25/2021 13:43*	WG1625241
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*02/25/2021 13:43*	WG1625241
(S) 2-Fluorobiphenyl	*88.9*		*34.0-125*		*02/25/2021 13:43*	WG1625241

Sample Narrative:

L1319322-03 WG1625241: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.51		1	02/26/2021 10:20	WG1625429

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/26/2021 03:28	WG1623783

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.27	T8	1	02/26/2021 02:49	WG1625080

Sample Narrative:

L1319322-04 WG1625080: 9.27 at 22C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	441		10.0	1	02/26/2021 13:32	WG1625953

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	349		0.500	1	02/25/2021 14:51	WG1625370
Cadmium	ND		0.500	1	02/25/2021 14:51	WG1625370
Copper	14.2		2.00	1	02/25/2021 14:51	WG1625370
Lead	12.4		0.500	1	02/25/2021 14:51	WG1625370
Nickel	13.1		2.00	1	02/25/2021 14:51	WG1625370
Selenium	ND		2.00	1	02/25/2021 14:51	WG1625370
Silver	ND		1.00	1	02/25/2021 14:51	WG1625370
Zinc	32.8		5.00	1	02/25/2021 14:51	WG1625370

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.217		0.200	1	02/25/2021 17:46	WG1625313

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.93		1.00	5	02/25/2021 11:25	WG1625371

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	399		10.0	100	02/25/2021 01:59	WG1625356
(S) a,a,a-Trifluorotoluene(FID)	*98.2*		*77.0-120*		*02/25/2021 01:59*	WG1625356

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00800	8	02/25/2021 02:09	WG1625252
Ethylbenzene	ND		0.0200	8	02/25/2021 02:09	WG1625252
Toluene	ND		0.0400	8	02/25/2021 02:09	WG1625252
1,2,4-Trimethylbenzene	2.34		0.0400	8	02/25/2021 02:09	WG1625252
1,3,5-Trimethylbenzene	2.96		0.0400	8	02/25/2021 02:09	WG1625252
Xylenes, Total	5.05		0.0520	8	02/25/2021 02:09	WG1625252
(S) Toluene-d8	*96.1*		*75.0-131*		*02/25/2021 02:09*	WG1625252
(S) 4-Bromofluorobenzene	*104*		*67.0-138*		*02/25/2021 02:09*	WG1625252
(S) 1,2-Dichloroethane-d4	*104*		*70.0-130*		*02/25/2021 02:09*	WG1625252

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	261		4.00	1	02/25/2021 14:41	WG1625284
C28-C36 Motor Oil Range	43.5		4.00	1	02/25/2021 14:41	WG1625284
(S) o-Terphenyl	*70.5*		*18.0-148*		*02/25/2021 14:41*	WG1625284

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Acenaphthene	0.0244		0.00600	1	02/25/2021 14:01	WG1625241
Acenaphthylene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Benzo(a)anthracene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Benzo(a)pyrene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Benzo(b)fluoranthene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Benzo(g,h,i)perylene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Benzo(k)fluoranthene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Chrysene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Dibenz(a,h)anthracene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Fluoranthene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Fluorene	0.0627		0.00600	1	02/25/2021 14:01	WG1625241
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/25/2021 14:01	WG1625241
Naphthalene	0.108		0.0200	1	02/25/2021 14:01	WG1625241
Phenanthrene	0.0758		0.00600	1	02/25/2021 14:01	WG1625241
Pyrene	ND		0.00600	1	02/25/2021 14:01	WG1625241
1-Methylnaphthalene	0.367		0.0200	1	02/25/2021 14:01	WG1625241
2-Methylnaphthalene	0.534		0.0200	1	02/25/2021 14:01	WG1625241
2-Chloronaphthalene	ND		0.0200	1	02/25/2021 14:01	WG1625241
(S) p-Terphenyl-d14	*106*		*23.0-120*		*02/25/2021 14:01*	WG1625241
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*02/25/2021 14:01*	WG1625241
(S) 2-Fluorobiphenyl	*88.2*		*34.0-125*		*02/25/2021 14:01*	WG1625241

Sample Narrative:

L1319322-04 WG1625241: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.12		1	02/26/2021 09:45	WG1625429

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/26/2021 03:33	WG1623783

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.47	T8	1	02/26/2021 02:49	WG1625080

Sample Narrative:

L1319322-05 WG1625080: 9.47 at 22C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	482		10.0	1	02/26/2021 13:32	WG1625953

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	739	J3 O1 V	0.500	1	02/25/2021 14:08	WG1625370
Cadmium	ND		0.500	1	02/25/2021 14:08	WG1625370
Copper	11.9		2.00	1	02/25/2021 14:08	WG1625370
Lead	8.24		0.500	1	02/25/2021 14:08	WG1625370
Nickel	12.3		2.00	1	02/25/2021 14:08	WG1625370
Selenium	ND		2.00	1	02/25/2021 14:08	WG1625370
Silver	ND		1.00	1	02/25/2021 14:08	WG1625370
Zinc	30.8		5.00	1	02/25/2021 14:08	WG1625370

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.207		0.200	1	02/25/2021 17:48	WG1625313

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.75		1.00	5	02/25/2021 10:37	WG1625371

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	594		10.0	100	02/25/2021 02:20	WG1625356
(S) a,a,a-Trifluorotoluene(FID)	*91.9*		*77.0-120*		*02/25/2021 02:20*	WG1625356

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0144		0.00800	8	02/25/2021 02:28	WG1625252
Ethylbenzene	ND		0.0200	8	02/25/2021 02:28	WG1625252
Toluene	0.492		0.0400	8	02/25/2021 02:28	WG1625252
1,2,4-Trimethylbenzene	4.68		0.0400	8	02/25/2021 02:28	WG1625252
1,3,5-Trimethylbenzene	4.84		0.0400	8	02/25/2021 02:28	WG1625252
Xylenes, Total	11.7		0.0520	8	02/25/2021 02:28	WG1625252
(S) Toluene-d8	*97.9*		*75.0-131*		*02/25/2021 02:28*	WG1625252
(S) 4-Bromofluorobenzene	*99.1*		*67.0-138*		*02/25/2021 02:28*	WG1625252
(S) 1,2-Dichloroethane-d4	*92.6*		*70.0-130*		*02/25/2021 02:28*	WG1625252

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	319		4.00	1	02/25/2021 14:54	WG1625284
C28-C36 Motor Oil Range	88.8		4.00	1	02/25/2021 14:54	WG1625284
(S) o-Terphenyl	*68.4*		*18.0-148*		*02/25/2021 14:54*	WG1625284

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Acenaphthene	0.0162		0.00600	1	02/25/2021 13:57	WG1625286
Acenaphthylene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Benzo(a)anthracene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Benzo(a)pyrene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Benzo(b)fluoranthene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Benzo(g,h,i)perylene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Benzo(k)fluoranthene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Chrysene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Dibenz(a,h)anthracene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Fluoranthene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Fluorene	0.0546		0.00600	1	02/25/2021 13:57	WG1625286
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	02/25/2021 13:57	WG1625286
Naphthalene	0.241		0.0200	1	02/25/2021 13:57	WG1625286
Phenanthrene	0.0705		0.00600	1	02/25/2021 13:57	WG1625286
Pyrene	ND		0.00600	1	02/25/2021 13:57	WG1625286
1-Methylnaphthalene	0.325		0.0200	1	02/25/2021 13:57	WG1625286
2-Methylnaphthalene	0.704		0.0200	1	02/25/2021 13:57	WG1625286
2-Chloronaphthalene	ND		0.0200	1	02/25/2021 13:57	WG1625286
(S) p-Terphenyl-d14	*121*	J1	*23.0-120*		*02/25/2021 13:57*	WG1625286
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*02/25/2021 13:57*	WG1625286
(S) 2-Fluorobiphenyl	*95.4*		*34.0-125*		*02/25/2021 13:57*	WG1625286

Sample Narrative:

L1319322-05 WG1625286: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3625380-1 02/26/21 00:42

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

L1316888-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1316888-01 02/26/21 01:16 • (DUP) R3625380-3 02/26/21 01:23

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	15.6	15.4	1	1.59		20

L1319330-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1319330-01 02/26/21 03:38 • (DUP) R3625380-8 02/26/21 03:44

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

Laboratory Control Sample (LCS)

(LCS) R3625380-2 02/26/21 00:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.95	99.5	80.0-120	

L1318020-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1318020-01 02/26/21 01:29 • (MS) R3625380-4 02/26/21 01:34 • (MSD) R3625380-5 02/26/21 01:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	1.17	19.2	18.8	90.4	87.9	1	75.0-125			2.55	20

L1318113-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1318113-04 02/26/21 02:49 • (DUP) R3625321-2 02/26/21 02:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.71	9.72	1	0.103		1

Sample Narrative:

OS: 9.71 at 22.1C

DUP: 9.72 at 22.2C

L1319311-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1319311-01 02/26/21 02:49 • (DUP) R3625321-3 02/26/21 02:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.27	8.25	1	0.242		1

Sample Narrative:

OS: 8.27 at 21.8C

DUP: 8.25 at 21.7C

Laboratory Control Sample (LCS)

(LCS) R3625321-1 02/26/21 02:49

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

Sample Narrative:

LCS: 10.01 at 19.6C

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

Method Blank (MB)

(MB) R3625478-1 02/26/21 13:32

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

L1319311-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1319311-01 02/26/21 13:32 • (DUP) R3625478-3 02/26/21 13:32

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	362	398	1	9.47		20

Laboratory Control Sample (LCS)

(LCS) R3625478-2 02/26/21 13:32

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	385	385	100	85.0-115	

Method Blank (MB)

(MB) R3625284-1 02/25/21 14:03

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) R3625284-2 02/25/21 14:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	105	105	80.0-120	
Cadmium	100	99.9	99.9	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	98.8	98.8	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	19.9	99.6	80.0-120	
Zinc	100	99.4	99.4	80.0-120	

L1319322-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1319322-05 02/25/21 14:08 • (MS) R3625284-5 02/25/21 14:17 • (MSD) R3625284-6 02/25/21 14:20

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	739	649	811	0.000	72.5	1	75.0-125	V	J3 V	22.3	20
Cadmium	100	ND	103	111	103	111	1	75.0-125			7.88	20
Copper	100	11.9	116	128	104	116	1	75.0-125			10.0	20
Lead	100	8.24	108	117	100	108	1	75.0-125			7.23	20
Nickel	100	12.3	114	124	102	112	1	75.0-125			8.34	20
Selenium	100	ND	103	111	103	111	1	75.0-125			7.50	20
Silver	20.0	ND	20.8	22.5	104	113	1	75.0-125			7.98	20
Zinc	100	30.8	120	133	89.3	102	1	75.0-125			10.4	20

Method Blank (MB)

(MB) R3625285-1 02/25/21 17:11

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

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

(LCS) R3625285-2 02/25/21 17:14 • (LCSD) R3625285-3 02/25/21 17:16

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 %
Hot Water Sol. Boron	1.00	1.02	1.03	102	103	80.0-120			1.67	20

Method Blank (MB)

(MB) R3625012-1 02/25/21 10:30

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) R3625012-2 02/25/21 10:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	101	101	80.0-120	

L1319322-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1319322-05 02/25/21 10:37 • (MS) R3625012-5 02/25/21 10:46 • (MSD) R3625012-6 02/25/21 10:49

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	20.0	7.75	105	118	97.5	111	5	75.0-125			11.7	20

Method Blank (MB)

(MB) R3624918-2 02/25/21 00:13

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)	*113*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3624918-1 02/24/21 23:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.17	94.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*105*	*77.0-120*	

Method Blank (MB)

(MB) R3625111-2 02/25/21 01:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*95.9*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3625111-1 02/25/21 00:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.10	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*111*	*77.0-120*	

L1318277-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1318277-03 02/25/21 03:01 • (MS) R3625111-3 02/25/21 10:31 • (MSD) R3625111-4 02/25/21 10:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	121	ND	149	151	123	125	25	10.0-151			1.33	28
(S) a,a,a-Trifluorotoluene(FID)					*113*	*113*		*77.0-120*				

Method Blank (MB)

(MB) R3625169-2 02/24/21 19:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*100*			*75.0-131*
(S) 4-Bromofluorobenzene	*98.8*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*90.5*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3625169-1 02/24/21 18:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.123	98.4	70.0-123	
Ethylbenzene	0.125	0.109	87.2	74.0-126	
Toluene	0.125	0.113	90.4	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.0942	75.4	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.0974	77.9	73.0-127	
Xylenes, Total	0.375	0.317	84.5	72.0-127	
(S) Toluene-d8			*99.1*	*75.0-131*	
(S) 4-Bromofluorobenzene			*100*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*99.5*	*70.0-130*	

L1318912-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1318912-01 02/24/21 20:48 • (MS) R3625169-3 02/25/21 02:47 • (MSD) R3625169-4 02/25/21 03:06

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	0.109	0.114	86.7	90.7	1	10.0-149			4.48	37
Ethylbenzene	0.125	ND	0.104	0.102	83.2	81.6	1	10.0-160			1.94	38
Toluene	0.125	ND	0.105	0.106	84.0	84.8	1	10.0-156			0.948	38
1,2,4-Trimethylbenzene	0.125	ND	0.101	0.0992	80.8	79.4	1	10.0-160			1.80	36
1,3,5-Trimethylbenzene	0.125	ND	0.109	0.105	87.2	84.0	1	10.0-160			3.74	38
Xylenes, Total	0.375	ND	0.297	0.291	78.9	77.3	1	10.0-160			2.04	38
(S) Toluene-d8					*101*	*99.3*		*75.0-131*				
(S) 4-Bromofluorobenzene					*97.1*	*96.4*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*91.1*	*92.1*		*70.0-130*				

Method Blank (MB)

(MB) R3625144-1 02/25/21 13:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	*70.1*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3625144-2 02/25/21 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	38.4	76.8	50.0-150	
(S) o-Terphenyl			*96.7*	*18.0-148*	

L1318898-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1318898-08 02/25/21 18:03 • (MS) R3625144-3 02/25/21 18:16 • (MSD) R3625144-4 02/25/21 18:30

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 %
C10-C28 Diesel Range	50.0	6.45	45.3	50.3	77.7	87.7	1	50.0-150			10.5	20
(S) o-Terphenyl					*84.4*	*85.4*		*18.0-148*				

Method Blank (MB)

(MB) R3624919-2 02/25/21 06:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*73.9*			*14.0-149*
(S) 2-Fluorobiphenyl	*74.0*			*34.0-125*
(S) p-Terphenyl-d14	*89.9*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3624919-1 02/25/21 06:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0572	71.5	50.0-126	
Acenaphthene	0.0800	0.0570	71.3	50.0-120	
Acenaphthylene	0.0800	0.0597	74.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0623	77.9	45.0-120	
Benzo(a)pyrene	0.0800	0.0533	66.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0565	70.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0576	72.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0572	71.5	49.0-125	
Chrysene	0.0800	0.0619	77.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0581	72.6	47.0-125	
Fluoranthene	0.0800	0.0575	71.9	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3624919-1 02/25/21 06:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0595	74.4	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0577	72.1	46.0-125	
Naphthalene	0.0800	0.0526	65.8	50.0-120	
Phenanthrene	0.0800	0.0564	70.5	47.0-120	
Pyrene	0.0800	0.0602	75.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0571	71.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0543	67.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0544	68.0	50.0-120	
(S) Nitrobenzene-d5			*76.0*	*14.0-149*	
(S) 2-Fluorobiphenyl			*73.5*	*34.0-125*	
(S) p-Terphenyl-d14			*89.4*	*23.0-120*	

L1319059-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1319059-03 02/25/21 10:10 • (MS) R3624919-3 02/25/21 10:27 • (MSD) R3624919-4 02/25/21 10:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0788	ND	0.0727	0.0722	92.3	91.2	1	10.0-145			0.690	30
Acenaphthene	0.0788	ND	0.0742	0.0742	94.2	93.7	1	14.0-127			0.000	27
Acenaphthylene	0.0788	ND	0.0783	0.0791	99.4	99.9	1	21.0-124			1.02	25
Benzo(a)anthracene	0.0788	ND	0.0774	0.0775	98.2	97.9	1	10.0-139			0.129	30
Benzo(a)pyrene	0.0788	ND	0.0712	0.0714	90.4	90.2	1	10.0-141			0.281	31
Benzo(b)fluoranthene	0.0788	ND	0.0702	0.0710	89.1	89.6	1	10.0-140			1.13	36
Benzo(g,h,i)perylene	0.0788	ND	0.0712	0.0717	90.4	90.5	1	10.0-140			0.700	33
Benzo(k)fluoranthene	0.0788	ND	0.0704	0.0710	89.3	89.6	1	10.0-137			0.849	31
Chrysene	0.0788	ND	0.0773	0.0776	98.1	98.0	1	10.0-145			0.387	30
Dibenz(a,h)anthracene	0.0788	ND	0.0716	0.0721	90.9	91.0	1	10.0-132			0.696	31
Fluoranthene	0.0788	ND	0.0726	0.0730	92.1	92.2	1	10.0-153			0.549	33
Fluorene	0.0788	ND	0.0763	0.0764	96.8	96.5	1	11.0-130			0.131	29
Indeno(1,2,3-cd)pyrene	0.0788	ND	0.0724	0.0726	91.9	91.7	1	10.0-137			0.276	32
Naphthalene	0.0788	ND	0.0727	0.0710	92.3	89.6	1	10.0-135			2.37	27
Phenanthrene	0.0788	ND	0.0703	0.0712	89.2	89.9	1	10.0-144			1.27	31
Pyrene	0.0788	ND	0.0749	0.0751	95.1	94.8	1	10.0-148			0.267	35
1-Methylnaphthalene	0.0788	ND	0.0770	0.0760	97.7	96.0	1	10.0-142			1.31	28
2-Methylnaphthalene	0.0788	ND	0.0731	0.0734	92.8	92.7	1	10.0-137			0.410	28
2-Chloronaphthalene	0.0788	ND	0.0716	0.0720	90.9	90.9	1	29.0-120			0.557	24
(S) Nitrobenzene-d5					*111*	*101*		*14.0-149*				
(S) 2-Fluorobiphenyl					*109*	*100*		*34.0-125*				
(S) p-Terphenyl-d14					*128*	*115*		*23.0-120*	J1			

Method Blank (MB)

(MB) R3625083-2 02/25/21 07:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	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
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*65.1*			*14.0-149*
(S) 2-Fluorobiphenyl	*67.0*			*34.0-125*
(S) p-Terphenyl-d14	*75.3*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3625083-1 02/25/21 06:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0650	81.3	50.0-126	
Acenaphthene	0.0800	0.0609	76.1	50.0-120	
Acenaphthylene	0.0800	0.0679	84.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0662	82.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0543	67.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0563	70.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0541	67.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0563	70.4	49.0-125	
Chrysene	0.0800	0.0609	76.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0572	71.5	47.0-125	
Fluoranthene	0.0800	0.0627	78.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3625083-1 02/25/21 06:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0637	79.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0584	73.0	46.0-125	
Naphthalene	0.0800	0.0594	74.3	50.0-120	
Phenanthrene	0.0800	0.0608	76.0	47.0-120	
Pyrene	0.0800	0.0601	75.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0614	76.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0599	74.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0605	75.6	50.0-120	
(S) Nitrobenzene-d5			*59.6*	*14.0-149*	
(S) 2-Fluorobiphenyl			*60.8*	*34.0-125*	
(S) p-Terphenyl-d14			*68.0*	*23.0-120*	

L1318941-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1318941-04 02/25/21 08:21 • (MS) R3625083-3 02/25/21 08:41 • (MSD) R3625083-4 02/25/21 09:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0792	ND	0.0814	0.0742	103	93.7	1	10.0-145			9.25	30
Acenaphthene	0.0792	ND	0.0779	0.0692	98.4	87.4	1	14.0-127			11.8	27
Acenaphthylene	0.0792	ND	0.0862	0.0765	109	96.6	1	21.0-124			11.9	25
Benzo(a)anthracene	0.0792	ND	0.0814	0.0735	103	92.8	1	10.0-139			10.2	30
Benzo(a)pyrene	0.0792	ND	0.0752	0.0678	94.9	85.6	1	10.0-141			10.3	31
Benzo(b)fluoranthene	0.0792	ND	0.0723	0.0645	91.3	81.4	1	10.0-140			11.4	36
Benzo(g,h,i)perylene	0.0792	ND	0.0707	0.0644	89.3	81.3	1	10.0-140			9.33	33
Benzo(k)fluoranthene	0.0792	ND	0.0725	0.0644	91.5	81.3	1	10.0-137			11.8	31
Chrysene	0.0792	ND	0.0774	0.0698	97.7	88.1	1	10.0-145			10.3	30
Dibenz(a,h)anthracene	0.0792	ND	0.0723	0.0656	91.3	82.8	1	10.0-132			9.72	31
Fluoranthene	0.0792	ND	0.0790	0.0714	99.7	90.2	1	10.0-153			10.1	33
Fluorene	0.0792	ND	0.0805	0.0720	102	90.9	1	11.0-130			11.1	29
Indeno(1,2,3-cd)pyrene	0.0792	ND	0.0735	0.0683	92.8	86.2	1	10.0-137			7.33	32
Naphthalene	0.0792	ND	0.0767	0.0679	96.8	85.7	1	10.0-135			12.2	27
Phenanthrene	0.0792	ND	0.0774	0.0696	97.7	87.9	1	10.0-144			10.6	31
Pyrene	0.0792	ND	0.0765	0.0685	96.6	86.5	1	10.0-148			11.0	35
1-Methylnaphthalene	0.0792	ND	0.0784	0.0688	99.0	86.9	1	10.0-142			13.0	28
2-Methylnaphthalene	0.0792	ND	0.0757	0.0668	95.6	84.3	1	10.0-137			12.5	28
2-Chloronaphthalene	0.0792	ND	0.0780	0.0695	98.5	87.8	1	29.0-120			11.5	24
(S) Nitrobenzene-d5					*106*	*99.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*108*	*100*		*34.0-125*				
(S) p-Terphenyl-d14					*121*	*109*		*23.0-120*	J1			

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
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
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Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
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Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
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Missouri	340	Wisconsin	998093910
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A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
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[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

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

Billing Information: **Same as above**

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

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

Project Description: **J17E Dumpline Release**

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

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Evan Mason

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

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TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH-GRO,DRO,ORO	BTEX	TABLE 915-1-PAH's	SAR, EC, pH, Boron	TABLE 915-1-Metals	Remarks	Sample # (lab only)
20210219-J17E (STK1)	Comp	SS		2/19/21	1130	2	X	X	X	X	X	TWO DAY	-01
20210219-J17E (STK2)					1145	2	X	X	X	X	X		02
20210219-J17E (STK3)					1200	2	X	X	X	X	X		03
20210219-J17E (STK4)					1215	2	X	X	X	X	X		04
20210219-J17E (STK5)					1230	2	X	X	X	X	X		05

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

Remarks: 2 DAY TAT

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 1076 2750 5078

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	EM 2/22/21	1200			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	
	2/22/21	1701		1.6 10	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: Condition: NCF / OK
			Kelly Miller	2/24/21 1030	

ENCLOSURE B – WASTE MAINIFESTS