



VIA ELECTRONIC MAIL –

November 3, 2021

Jake Janicek
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Caerus Oil and Gas LLC
143 Diamond Avenue
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**Subject: Report of Work Completed
Dumpline Release – COGCC Remediation Number 17035
J17E
Mamm Creek Field
Garfield County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Oil and Gas, LLC (Caerus), conducted supplemental drilling activities, soil sampling, monitoring well development, groundwater sampling, air sparge (AS) and soil vapor extraction (SVE) well installation, and pilot testing associated with the dumpline release at the J17E (Facility ID: 334782) pad location (Site). These activities were completed in response to the release to define the extent of the soil and groundwater plume and to determine the viability of air sparge and SVE remediation approach. All investigation activities prior to April 30, 2021 can be referenced in Colorado Oil and Gas Conservation Commission (COGCC) Document Number 402675870 and Remediation Number 17035. The Site is in the Caerus Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

SOIL ASSESSMENT ACTIVITIES

Between August 23 and September 2, 2021, WSP personnel and GDI Drilling (GDI) completed assessment drilling activities for 10 boreholes in response to the Conditions of Approval (COA) issued by the COGCC. Of the 10 boreholes, eight were converted to monitoring wells, one was converted to an air sparge well, and one was converted to a SVE well. Prior to drilling, borings were cleared with a hydro-vac truck by WCO Oilfield Services, Inc (WCO) to a depth of 10 feet below ground surface (bgs) or refusal. The boreholes were advanced using a truck-mounted drill rig equipped with a hollow stem auger to depths ranging from 65 to 78 feet bgs. Five soil borings and resulting monitoring wells (MW03, MW04, MW05, MW06, and MW07) were completed on the Site pad outside of the benched excavation area and beneath the former tank battery location. Four soil borings and resulting monitoring wells (MW08 and MW09), air sparge well (AS1), and SVE well (SVE1) were completed in the excavation area, and one soil boring and resulting monitoring well (MW10) was completed on the Couey Ranch to the south. The air sparge, SVE, and monitoring well locations are shown on Figure 2.

On October 13 and 14, 2021, WSP personnel completed additional assessment drilling activities at the Site. Using a truck-mounted drill rig equipped with a solid stem auger, one soil boring was advanced to a depth 65 feet bgs. Soil boring SB03 was advanced approximately 30 feet south of monitoring well MW10 location off the original pad construction disturbance. The soil boring location is depicted on Figure 2.

All drilling oversight, soil sampling, and screening activities were conducted by a WSP geologist who screened each borehole at five-foot intervals and inspected for the presence or absence of petroleum hydrocarbons odor and/or staining. Soil was characterized utilizing the United Soil Classification System (USCS) by visually inspecting the soil samples and field screening the soil head space using a photo-ionization detector (PID) to monitor for the presence or absence of volatile organic compounds. Soil samples were submitted when split spoon recovery was sufficient for

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submittal and when impacts were observed. Samples generally were collected at each 10-foot interval starting from the bottom of the pothole to the boring terminus. The number of soil samples for each boring/well and the depth associated with each sample are summarized in Table 1.

All soil samples were collected in clean laboratory-prepared containers and submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis of a reduced analytical suite previously approved by the Director of arsenic, barium, cadmium, chromium VI, nickel, selenium, pH, sodium adsorption ratio (SAR), total petroleum hydrocarbons (total volatile [C₆-C₁₀] and extractable [C₁₀-C₃₆] hydrocarbons), benzene, toluene, ethylbenzene, and total xylenes (BTEX), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, and naphthalene. The approved analyte list was evaluated under the COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations milligrams per kilogram (mg/kg) Risk Based (R) and Maximum Concentration Level (MCL) Based (M). The soil boring logs and well completion logs are included in Enclosure A and laboratory analytical reports are provided in Enclosure C. The soil boring/monitoring well locations are depicted Figure 2.

WELL INSTALLATION

Groundwater monitoring wells were installed in eight (8) of the soil borings as shown on Figure 2. The monitoring wells were set approximately 3 to 7 feet into the water table to allow for a sufficient volume of water for purging. The monitoring wells were constructed using 2-inch schedule 40 polyvinyl chloride (PVC) casing and 10 feet of 2-inch schedule 40 PVC 10 slot screen (0.10 inch). All well bottoms were capped with a 2-inch schedule 40 PVC threaded cap and the wells were filter packed with 10/20 silica sand to 2 feet above the screen. The remainder of the boring annulus was filled with 3/8-inch hydrated bentonite chips to seal the well. The wells installed outside of the benched excavation area were completed with a steel surface monument and protective concrete jersey barriers were placed around the wellhead. Wells installed within the benched excavation were not completed with surface well monuments as the area is gated off from traffic. All wells were capped with a 2-inch J-plug well plug.

The SVE well (SVE01) was installed in the benched excavation area where hydrocarbon impacts were previously observed. SVE01 was set approximately 5 feet above the water table. The SVE well was constructed using 2-inch schedule 40 PVC casing and 20 feet of 2-inch schedule 40 PVC 10 slot screen (0.10 inch). The well bottom was capped with a 2-inch schedule 40 PVC threaded cap and the wells were filter packed with 10/20 silica sand to 2 feet above the screen. The remainder of the boring annulus was filled with 3/8-inch hydrated bentonite chips to seal the well. The well was capped with a 2-inch J-plug well plug.

The air sparge well (AS01) was installed in the benched excavation area where hydrocarbon impacts were observed. AS01 was set approximately 10 feet in the water table. AS01 was constructed using 2-inch schedule 40 PVC casing and 2 feet of 2-inch schedule 40 PVC 10 slot screen (0.1 inch). The well bottom was capped with a 2-inch schedule 40 PVC threaded cap and the wells were filter packed with 10/20 silica sand to 1 foot above the screen. The well was sealed with time-released bentonite chips from the filter pack to 6" over the water table. The remainder of the annulus was sealed with Sakrete high strength (4000 pounds per square inch (PSI)) concrete. The remainder of the boring annulus was filled with 3/8-inch hydrated bentonite chip to seal the well. The well was capped with a 2-inch J-plug well plug.

MONITORING WELL DEVELOPMENT AND SAMPLING

On August 26, 27, 31, and September 7, 2021, WSP personnel developed groundwater monitoring wells MW03 through MW10 using high density polyethylene (HDPE) disposable bailers. During well development, at least ten well casings of groundwater were removed from each well. Depth to groundwater and total well depths were measured in each monitoring well utilizing an oil water interface probe. Light non-aqueous phase liquid (LNAPL) was not observed in any of the monitoring wells. Depth to groundwater ranged from 53.50 feet in MW08 to 67.20 feet in MW10. All groundwater measurements were collected from the top of casing (TOC) of the well. Following well development, groundwater samples were collected at each of the eight monitoring well locations. All groundwater samples were submitted to Pace for laboratory analysis of the contaminants listed in COGCC Table 915-1 for



groundwater. A relative groundwater elevation map is included as Figure 4 and a summary of groundwater elevation data is included in Table 2.

QUARTERLY GROUNDWATER SAMPLING

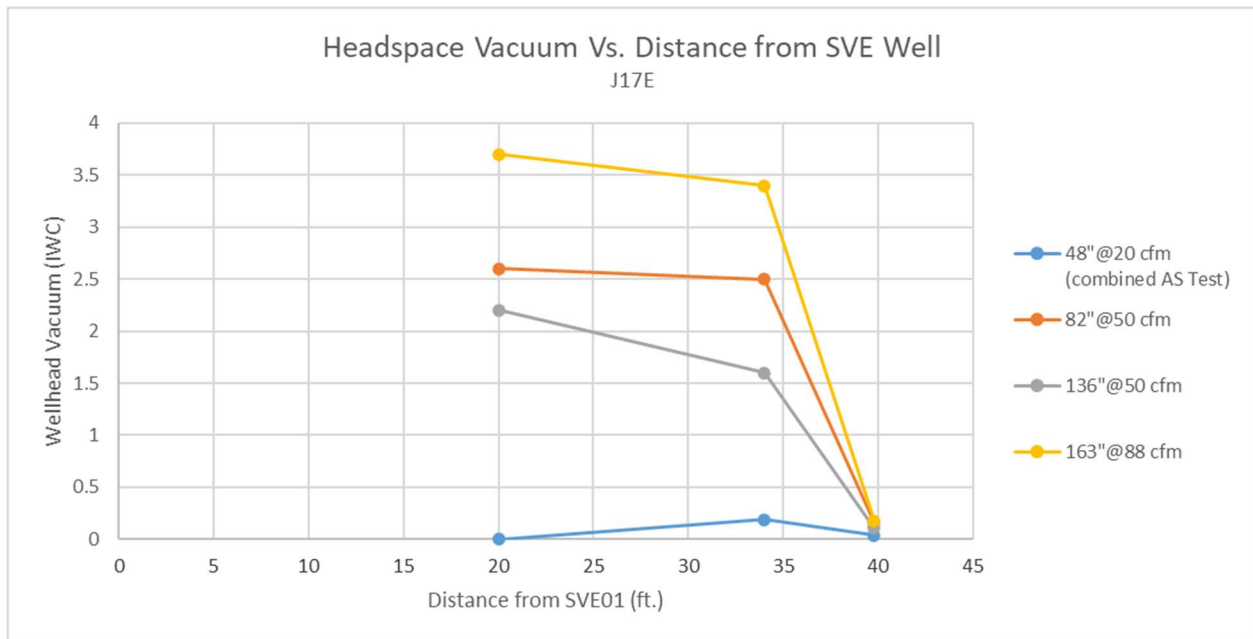
On October 4, 2021, WSP personnel conducted the quarterly groundwater monitoring activities at the Site. The groundwater monitoring activities performed include fluid level gauging and the collection of groundwater samples in all existing groundwater monitoring wells. A total of 11 groundwater samples were collected. When completing the fourth quarter 2021 sampling activities, LNAPL was not observed in any of the monitoring well locations. To properly purge the wells prior to sampling, either three well casing volumes of groundwater were removed from each well or the well was purged dry using HDPE disposable bailers. Depth to groundwater ranged from 53.54 feet in MW08 to 73.16 feet in MW01. All groundwater measurements were collected from the TOC of the well. Groundwater generally flows from the south to the north-northwest direction at the Site. All groundwater samples were submitted to Pace for laboratory analysis of the contaminants listed in COGCC Table 915-1 for groundwater. A Site Map depicting the groundwater monitoring well locations are included as Figure 2. A Potentiometric Map illustrating relative groundwater flow direction is included as Figure 3. A summary of groundwater elevation data is included in Table 2.

SVE AND AS PILOT TESTING

On September 17 and 23, 2021 WSP conducted SVE and AS pilot testing activities. Pilot testing was conducted to evaluate the efficacy of the technologies and determine the air removal flowrate and applied vacuum (SVE) and applied pressure and air injection flowrate (AS) required to influence the subsurface soil and groundwater to volatilize entrained hydrocarbons. One SVE well and one AS well were installed at the site as described above and monitoring wells and the SB02 well were used as observation points.

A pilot test skid was utilized to provide vacuum and flow measurements during testing. The SVE pilot test was conducted on September 17, 2021. The SVE01 test well was piped to the pilot test skid blower and vacuum was applied. The SVE exhaust stack volatile organic compound (VOC) measurements and vacuum responses at the observation wells (SB02, MW08, and MW09) were recorded. Observation wells were a distance of 20 feet, 34 feet, and 40 feet from the pilot test well. Different vacuums were applied to the SVE test well and the corresponding influence observed was recorded.

The graph below represents observed vacuum response in the observation wells in relation to distance from the pilot test well SVE01. Four different vacuums and corresponding flow rates were tested. Of note, the 20 cubic feet per minute (cfm) test was conducted as a dual AS/SVE test which also had applied pressure in the groundwater from the AS01 well. This data point was included on the graph for a lower flowrate and applied vacuum representation. The AS test well likely biased the vacuum low in the observation points, but a vacuum was still observed in a well up to a distance of 40 feet. From the graph below vacuum response was observed in the unsaturated impacted soil interval at all flow rates tested. A radius of at least 35 feet can be obtained at the lowest flowrate and vacuum tested at 48 inches of water column (IWC) and 20 cfm.



During the SVE pilot test VOC measurements were recorded with a PID. These measurements ranged from 404 ppm to 845 ppm, indicating high volatility of hydrocarbons present and removal from the subsurface through SVE.

The AS test was conducted on September 23, 2021 utilizing the pilot test skid. Four air injection flow rates were tested 2 cfm, 6 cfm, 10 cfm, and 12 cfm. Corresponding responses from observation wells SVE-01, SB02, MW08, and MW09 at a distance from AS01 of 20 feet, 20 feet, 30 feet, and 40 feet, respectively. The well pressure, headspace VOC concentration, and change in depth to water were all measured to determine influence.

Graphs of pressure, percent change in VOCs, and change in water depth are all included as Enclosure B. The graphs indicate influence was observed in all observation wells up to a distance of 40 feet from AS01. The change in VOCs increased in the monitoring well MW08 at a distance of 30 feet from 2.2 ppm to 410 ppm and in MW09 at a distance of 40 feet there was not significant change in VOC concentrations. At a distance of 40 feet, a pressure response and an increase in depth to water were observed. As volatilization is one of the primary indicators of influence the anticipated radius of influence would be approximately 30 feet as a significant increase was not observed at 40 feet. The increase in VOC concentrations at distances up to 30 feet indicate that AS is a viable technology for remediation of hydrocarbon impacted groundwater.

Following the AS pilot test a dual test with both AS and SVE was conducted to simulate full scale AS/SVE system emissions. Upon measurement collection and running the system for one hour, an air sample was collected in a 1-liter Tedlar bag for laboratory analysis. The air sample was shipped under chain-of-custody protocol to ALS Environmental (ALS) of Simi Valley, California for laboratory analysis of total petroleum hydrocarbons as Gasoline by EPA TO-3 Modified and BTEX by EPA TO-15 Modified. Results indicate a total petroleum hydrocarbons (TPH) concentration of 15 milligrams per liter. Air permitting evaluation can be conducted upon full scale system design. The laboratory analytical report is included as Enclosure C.

A full scale AS/SVE system can be designed with the following data points derived from the pilot test:

- SVE per well ROI of 35 feet with a flowrate of 20 cfm and vacuum of 50 IWC.
- AS per well ROI of 30 feet with a flowrate of 5 cfm at a pressure of 25 PSI.

Pilot test field measurements and data interpretation graphs are included as Enclosure B.



SOIL ANALYTICAL RESULTS

Laboratory analytical results of the 64 soil samples collected between August 23, and October 14, 2021 indicate all soil samples collected exceed Table 915-1 Concentration Levels for Protection of Groundwater Soil Screening Level Concentrations (R) or (M) for either arsenic, cadmium, barium, nickel, selenium, TPH, BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, and/or naphthalene. All 64 samples exceed the COGCC Table 915-1 (M) Soil Screening Concentration Level for arsenic with concentrations ranging from 5.21 mg/kg in soil sample 20211013-J17E(SB03)@55-57.5' to 104 mg/kg in soil sample 20210830-J17E(MW09)@30-32'. All 64 samples exceed the COGCC Table 915-1 (M) Soil Screening Concentration Level for barium with concentrations ranging from 118 mg/kg in soil sample 20210825-J17E(MW05)@55-57' to 540 mg/kg in soil sample 20211014-J17E(SB03)@65-67.5'. Of the 64 soil boring samples, 41 exceed the COGCC Table 915-1 (M) Soil Screening Concentration Level for cadmium with concentrations ranging from 0.380 mg/kg in soil sample 20210824-J17E(MW07)@35-37' to 1.13 mg/kg in soil sample 20210902-J17E(MW04)@60-61.5'. Soil boring samples 20210830-J17E(MW09)@55-57' and 20210902-J17E(MW10)@25-27' exceed the COGCC Table 915-1 (R) Soil Screening Concentration Level for nickel with concentrations of 36.6 mg/kg and 27.3 mg/kg, respectively. Thirty-two (32) of the 64 soil boring samples collected exceed the COGCC Table 915-1 (M) Soil Screening Concentration Level for selenium with concentrations ranging from 0.789 mg/kg in soil sample 20210831-J17E(MW08)@60-62' to 3.96 mg/kg in soil sample 20210830-J17E(MW09)@45-47'. Five of the soil boring samples exceed the COGCC Table 915-1 Concentration Level for TPH with concentrations ranging from 954 mg/kg in soil sample 20210831-J17E(MW08)@20-21.5' to 3900 mg/kg in soil sample 20210901-J17E(AS01)@25-27'. Fourteen (14) of the 64 soil boring samples exceed the COGCC Table 915-1 (M) Soil Screening Concentration Level for benzene with concentrations ranging from 0.00375 mg/kg in soil sample 20210902-J17E(MW10)@35-37' to 1.30 mg/kg in soil sample 20210901-J17E(AS01)@35-37'. Four of the 64 soil boring samples exceed the COGCC Table 915-1 (M) Soil Screening Concentration Level for toluene, ethylbenzene, and total xylenes with toluene concentrations ranging from 5.98 mg/kg in soil sample 20210901-J17E(AS01)@50-52' to 50.1 mg/kg in soil sample 20210901-J17E(AS01)@35-37', ethylbenzene concentrations ranging from 0.976 mg/kg in soil sample 20210901-J17E(AS01)@50-52' to 7.31 mg/kg in soil sample 20210901-J17E(AS01)@35-37', and total xylene concentrations ranging from 17.2 mg/kg in soil sample 20210901-J17E(AS01)@50-52' to 113 mg/kg in soil sample 20210901-J17E(AS01)@35-37'. Eleven (11) of the 64 soil samples exceed the COGCC Table 915-1 (R) Soil Screening Concentration Level for 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene. 1,2,4-trimethylbenzene concentrations ranged from 0.0113 mg/kg in soil sample 20210827-J17E(SVE01)@45-47' to 23.2 mg/kg in soil sample 20210901-J17E(AS01)@35-37', and 1,3,5-trimethylbenzene concentrations ranged from 0.0126 mg/kg in soil sample 20210827-J17E(SVE01)@45-47' to 22.4 mg/kg in soil sample 20210901-J17E(AS01)@35-37'. Seven of the 64 soil samples exceed the COGCC Table 915-1 (R) Soil Screening Concentration Level for 1-methylnaphthalene with concentrations ranging from 0.00787 mg/kg in soil sample 20210901-J17E(AS01)@60-61.5' to 1.12 mg/kg in soil sample 20210901-J17E(AS01)@25-27'. Six of the 64 soil samples exceed the COGCC Table 915-1 (R) Soil Screening Concentration Level for 2-methylnaphthalene with concentrations ranging from 0.0266 mg/kg in soil sample 20210827-J17E(SVE01)@25-27' to 2.74 mg/kg in soil sample 20210901-J17E(AS01)@25-27'. Lastly, 10 of the soil boring samples collected exceed the COGCC Table 915-1 (R) Soil Screening Concentration Level for naphthalene with concentrations ranging from 0.00454 mg/kg in soil sample 20210824-J17E(MW03)@60-62' to 1.28 mg/kg in soil sample 20210901-J17E(AS01)@35-37'.

Laboratory analytical results indicate that 62 of the 64 soil boring samples collected between August 23 and October 13, 2021 exceed the COGCC Table 915-1 Cleanup Level for pH with values ranging from 8.30 in soil sample 20210827-J17E(SVE01)@25-27' to 10.0 in soil sample 20210831-J17E(MW08)@40-41.5'. Laboratory analytical results indicate six of the 64 soil boring samples collected between August 23 and October 13, 2021 exceed the COGCC Table 915-1 Cleanup Level for SAR with values ranging from 6.24 in soil sample 20210902-J17E(MW10)@45-47' to 39.4 in soil sample 20210831-J17E(MW08)@50-52'. All laboratory analytical results are included as Enclosure C and soil boring analytical results are summarized in Table 3.



GROUNDWATER ANALYTICAL RESULTS

Laboratory analytical results of the seven groundwater well samples (MW03 through MW10) collected post-well development were either below the laboratory detection limits or within the COGCC Table 915-1 Concentration Levels for BTEX), 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. Chloride concentrations ranged from 8.94 milligrams per liter (mg/L) in MW07 to 11.5 mg/L in MW09. Sulfate concentrations ranged from 96.5 mg/L in MW06 to 103 mg/L in MW07. Total dissolved solids (TDS) concentrations ranged from 772 mg/L in MW04 to 885 mg/L in MW05. A summary of groundwater laboratory analytical results is included as Table 4 and a map of all sampling locations is included as Figure 2. The laboratory analytical reports are included as Enclosure C.

Laboratory analytical results of all groundwater samples collected during the fourth quarter (MW01 through MW10 and SB02-TB) were either below the laboratory detection limits or within the COGCC Table 915-1 Concentration Levels for groundwater except for benzene at the SB02-TB location. SB02-TB reported a benzene concentration of 186.0 micrograms per liter ($\mu\text{g/L}$). Chloride concentrations ranged from 6.73 mg/L in MW02 to 44.5 mg/L in MW01. Sulfate concentrations ranged from 95.3 mg/L in MW05 and MW08 to 117 mg/L in MW01. TDS concentrations ranged from 516 in MW07 to 1,230 mg/L in MW08. A summary of groundwater laboratory analytical results is included as Table 3 and a map of all sampling locations and corresponding analytical results is included as Figure 4. The laboratory analytical reports are included as Enclosure C.

CONCLUSIONS

Based on the installation of eight additional monitoring wells in August and September 2021, delineation of the hydrocarbon plume has been completed. All perimeter groundwater monitoring wells are either within the COGCC Table 915-1 Concentrations Levels for groundwater or non-detect for BTEX, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. At the initial source area, groundwater monitoring well SB02-TB has observed an increase in benzene concentrations since the inception of this project. Caerus will continue to monitor all existing monitoring wells on a quarterly basis. Prior to the start of 2022 first quarterly groundwater sampling activities, Caerus should request a reduced groundwater analyte suite to only include the analysis of BTEX for all future samples via Supplemental Site Investigation Work Plan (Document Number 402853537).

AS/SVE pilot testing activities determined that the technology is a viable option for remediation of the hydrocarbon impact. AS influence was observed up to a distance of 30 feet and SVE influence was observed at a distance of at least 35 feet. Increased hydrocarbon volatilization was observed during testing. The pilot test information can be used to design a full scale AS/SVE system.

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

Kind regards,

Dustin Held
Sr. Consultant, Environmental Geologist

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

Encl.

FIGURES

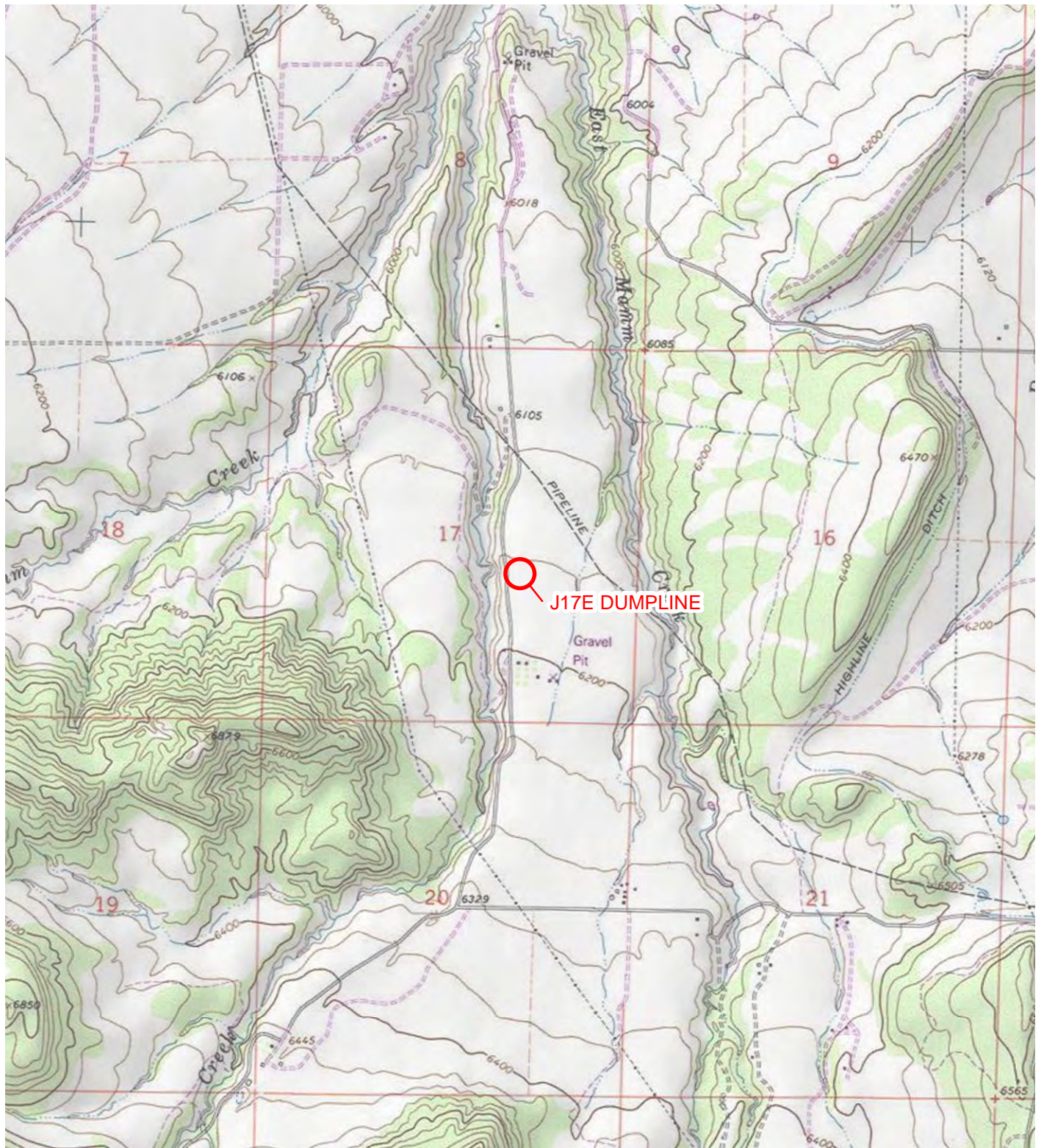


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

0 2,000 4,000
Feet



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





IMAGE COURTESY OF ESRI (MAXAR 2019)

LEGEND

- ⊗ MONITORING WELL
- SOIL BORING
- ▲ AIR SPARGING WELL (AS)
- SOIL VAPOR EXTRACTION WELL (SVE)

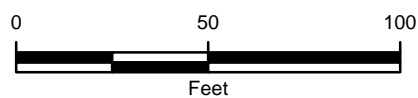


FIGURE 2
SITE MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC



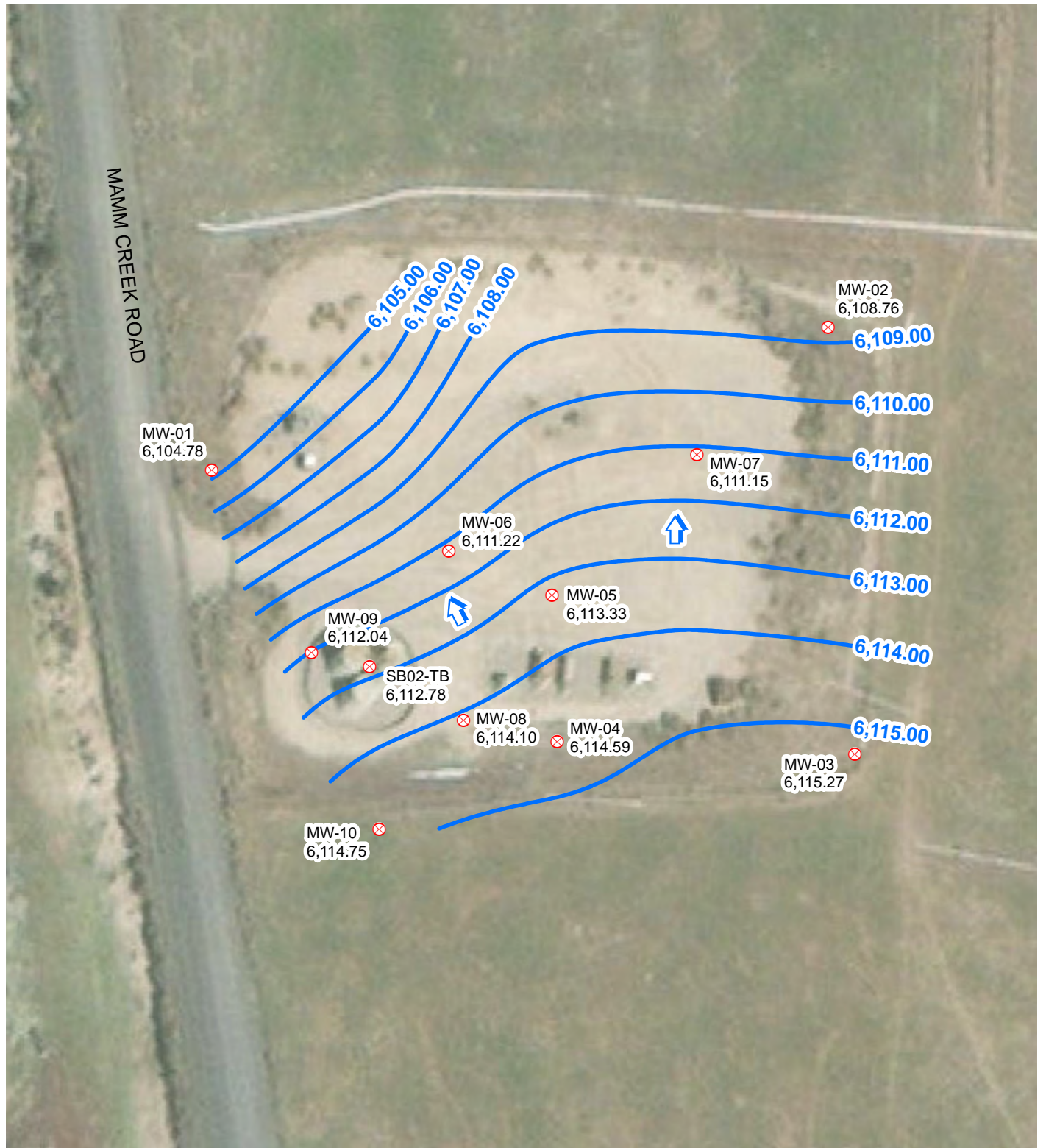


IMAGE COURTESY OF ESRI (MAXAR 2019)

LEGEND



MONITORING WELL



ESTIMATED GROUNDWATER FLOW DIRECTION



RELATIVE GROUNDWATER ELEVATION CONTOUR

CONTOUR INTERVAL = 1.00 FOOT

GRADIENT = 0.05 FEET/FOOT

GROUNDWATER ELEVATIONS WERE
MEASURED ON OCTOBER 4, 2021.

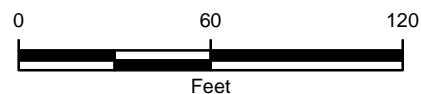


FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC



WELL ID
 SAMPLE DATE
 B: BENZENE IN MICROGRAMS PER LITER (µg/L)
 T: TOLUENE (µg/L)
 E: ETHYLBENZENE (µg/L)
 X: TOTAL XYLENES (µg/L)
 NAPH: NAPHTHALENE (µg/L)
 1,2,4-TRI: 1,2,4 TRIMETHYLBENZENE (µg/L)
 1,3,5-TRI: 1,3,5 TRIMETHYLBENZENE (µg/L)
 PT: PRODUCT THICKNESS (FEET)
BOLD INDICATES RESULT EXCEEDS THE APPLICABLE STANDARD
 ND: ANALYTE NOT DETECTED

MW-01
 10/04/2021
 B: 0.147
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-02
 10/04/2021
 B: 0.101
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-06
 10/04/2021
 B: 0.104
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-05
 10/04/2021
 B: 0.098
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-07
 10/04/2021
 B: 0.161
 T: ND
 E: ND
 X: 0.232
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-09
 10/04/2021
 B: 0.111
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

SB02-TB
 10/04/2021
 B: **186.0**
 T: 94.4
 E: 1.180
 X: 14.40
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-10
 10/04/2021
 B: ND
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-08
 10/04/2021
 B: 0.134
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-04
 10/04/2021
 B: ND
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MW-03
 10/04/2021
 B: ND
 T: ND
 E: ND
 X: ND
 NAPH: ND
 1,2,4-TRI: ND
 1,3,5-TRI: ND
 PT: ND

MAMM CREEK ROAD

LEGEND

⊗ MONITORING WELL

0 50 100
 Feet



IMAGE COURTESY OF ESRI (MAXAR 2019)

FIGURE 4
 GROUNDWATER ANALYTICAL RESULTS
 J17E DUMPLINE
 NWSE SEC 17-T7S-R92W
 GARFIELD COUNTY, COLORADO
 CAERUS OIL AND GAS LLC



TABLES

TABLE 1
SOIL BORING SOIL SAMPLE INTERVALS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

Boring/Well ID	Sampled Interval (ft bgs)
MW03	15-17
	35-37
	40-42
	50-52
	60-62
MW04	15-17
	20-22
	35-37
	45-47
	50-52
MW05	60-61.5
	10-12
	20-22
	35-37
	45-47
MW06	55-57
	15-17
	20-22
	35-37
	45-47
MW07	55-57
	15-17
	25-27
	35-37
	45-47
MW08	60-62
	20-21.5
	30-31.5
	40-41.5
	50-52
MW09	60-62
	65-66.3
	20-22
	30-32
	45-47
MW10	55-57
	65-67
	5-7
	15-17
	25-27
AS01	35-37
	40-41.5
	50-52
	60-61.5
	68-70
SVE01	25-27
	35-37
	45-47
	55-57
	63-65
SB03	5-7
	15-17
	25-27
	35-37
	45-46.5
	55-57.5
	65-67.5
	67-68.5

Notes:

bgs - below ground surface

ft - feet

TABLE 2

**GROUNDWATER ELEVATION DATA
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC**

Wells	Date	DTW TOC (feet)	DTP TOC (feet)	Product Thickness (feet)	TD TOC (feet)	TOC Elevation (feet)	GW Elevation (feet)
MW01	4/21/2021	72.60	ND	ND	75.44	6,177.94	6,105.34
	10/4/2021	73.16	ND	ND	77.56	6,177.94	6,104.78
MW02	4/27/2021	66.52	ND	ND	68.36	6,175.57	6,109.05
	10/4/2021	66.81	ND	ND	68.39	6,175.57	6,108.76
SB02-TB	4/2/2021	52.21	ND	ND	55.21	6,167.77	6,115.56
	10/4/2021	54.99	ND	ND	57.14	6,167.77	6,112.78
MW03	8/26/2021	64.70	ND	ND	72.80	6180.11	6,115.41
	10/4/2021	64.84	ND	ND	72.78	6180.11	6,115.27
MW04	9/7/2021	62.90	ND	ND	69.02	6177.55	6,114.65
	10/4/2021	62.96	ND	ND	69.04	6177.55	6,114.59
MW05	8/27/2021	65.00	ND	ND	68.00	6178.33	6,113.33
	10/4/2021	65.00	ND	ND	70.49	6178.33	6,113.33
MW06	8/31/2021	67.10	ND	ND	73.14	6178.22	6,111.12
	10/4/2021	67.00	ND	ND	73.06	6178.22	6,111.22
MW07	8/26/2021	66.72	ND	ND	70.50	6177.77	6,111.05
	10/4/2021	66.62	ND	ND	69.57	6177.77	6,111.15
MW08	9/7/2021	53.50	ND	ND	59.30	6167.64	6,114.14
	10/4/2021	53.54	ND	ND	59.43	6167.64	6,114.10
MW09	9/7/2021	55.75	ND	ND	60.10	6167.87	6,112.12
	10/4/2021	55.83	ND	ND	60.00	6167.87	6,112.04
MW10	9/7/2021	67.20	ND	ND	72.85	6182.15	6,114.95
	10/4/2021	67.40	ND	ND	72.86	6182.15	6,114.75

Notes:

DTW - Depth to Water

DTP - Depth to Product

TOC - Top of Casing

TD - Total Depth

GW - Groundwater

ND - Not Detected

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210330-J17E (SB01)@5-6'	20210330-J17E (SB01)@15.5-17'	20210330-J17E (SB01)@25-26'	20210330-J17E (SB01)@35-36.5'	20210330-J17E (SB01)@45.5-47.5'	20210330-J17E (SB01)@60-62'	20210331-J17E (SB02-TB)@20-22'
Sample Date				3/30/2021	3/30/2021	3/30/2021	3/30/2021	3/30/2021	3/30/2021	3/31/2021
Sample Depth (feet)				5-6	15.5-17	25-26	35-36.5	45.5-47.5	60-62	20-22
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	4.87	9.62	12.1	12.6	12.1	13.6	6.02
Barium	15,000	82 (M)	mg/kg	262	270	286	198	163	200	210
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.255	0.255	0.314	0.337	1.60	0.565	0.401
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	18.3	24.1	14.6	13.3	16.6	24.9	13.9
Selenium	390	0.26 (M)	mg/kg	1.50	1.51	ND	0.932	0.933	0.934	0.836
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.76	8.90	8.96	8.90	8.87	8.95	8.18
SAR	<6	<6	unitless	0.983	0.788	0.677	0.686	0.822	2.80	5.26
TPH-GRO			mg/kg	0.663	ND	ND	ND	ND	ND	162
TPH-DRO			mg/kg	19.9	12.4	15.1	26.6	26.1	11.6	12.8
TPH-ORO			mg/kg	25.2	55.3	77.1	119	94.9	43.3	6.65
TPH	500	500	mg/kg	45.8	0.0	0.0	0.0	0.0	0.0	19.5
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	0.145
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	0.884
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	0.544
Total Xylenes	58	9.9 (M)	mg/kg	0.00120	0.00173	0.00214	ND	0.00146	ND	11.9
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	0.00195	0.00230	ND	ND	ND	1.50
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	0.00226	0.00320	ND	ND	ND	1.60
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	0.0404
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	0.102
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	0.0753
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND

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

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210331-J17E (SB02-TB)@30-31.5'	20210331-J17E (SB02-TB)@40-42'	20210331-J17E (SB02-TB)@50-52'	20210331-J17E (SB02-TB)@60-62'	20210331-J17E (SB02-TB)@70-71'	20211013 - J17E (SB03) @ 5-7'	20211013 - J17E (SB03) @ 15-17'
Sample Date				3/31/2021	3/31/2021	3/31/2021	3/31/2021	3/31/2021	10/13/2021	10/13/2021
Sample Depth (feet)				30-31.5	40-42	50-52	60-62	70-71	5-7	15-17
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	7.46	5.01	2.85	6.08	7.17	8.19	13.9
Barium	15,000	82 (M)	mg/kg	210	171	135	165	235	270	233
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.332	0.291	0.193	0.263	0.252	0.386	0.417
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	17.0	20.2	11.3	13.2	17.7	13.0	11.6
Selenium	390	0.26 (M)	mg/kg	0.964	1.05	ND	ND	1.80	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.38	8.31	8.89	8.99	8.59	8.54	8.63
SAR	<6	<6	unitless	1.28	1.26	3.91	4.95	2.65	2.32	1.03
TPH-GRO			mg/kg	318	93.1	3.18	8.94	0.934	0.0758	0.0844
TPH-DRO			mg/kg	27.2	ND	ND	ND	15.8	13.9	17.7
TPH-ORO			mg/kg	40.3	1.55	0.366	1.46	48.9	45.3	48.6
TPH	500	500	mg/kg	385.5	94.7	3.5	10.4	65.6	59.3	66.4
Benzene	1.2	0.0026 (M)	mg/kg	0.424	0.402	0.0201	0.00852	0.00495	ND	ND
Toluene	490	0.69 (M)	mg/kg	4.69	0.290	0.00343	0.00790	0.00750	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.866	0.0671	0.00481	0.00954	0.00113	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	16.6	0.266	0.0170	0.0303	0.0110	0.00110	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	3.83	0.00636	0.00216	0.00360	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	4.22	0.00649	0.00225	0.00614	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	0.0514	0.00562	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	0.143	0.0146	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	0.297	0.00694	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND	NA	ND	ND

NOTES:
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COGCC - Colorado Oil and Gas Conservation Commission
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TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				202111013 - J17E (SB03) @ 25-27'	202111013 - J17E (SB03) @ 35-37'	202111013 - J17E (SB03) @ 45-46.5'	202111014 - J17E (SB03) @ 55-57.5'	202111014 - J17E (SB03) @ 65-67.5'	202111014 - J17E (SB03) @ 67-68.5'	20210419-J17E (MW01)@10-12'
Sample Date				10/13/2021	10/13/2021	10/13/2021	10/14/2021	10/14/2021	10/14/2021	4/19/2021
Sample Depth (feet)				25-27	35-37	45-46.5	55-57.5	65-67.5	67-68.5	10-12
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	9.38	7.39	17.4	5.21	6.58	6.90	11.3
Barium	15,000	82 (M)	mg/kg	151	522	237	177	540	197	190
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.575	0.412	0.333	0.320	0.333	0.606	0.377
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	13.3	16.8	15.6	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	7.51	9.49	7.62	NA
Nickel	1,500	26 (R)	mg/kg	15.8	13.4	14.8	10.3	11.8	10.5	12.1
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.32	8.62	8.83	8.44	8.24	8.32	9.29
SAR	<6	<6	unitless	0.825	2.47	4.32	4.28	1.79	1.68	1.03
TPH-GRO			mg/kg	0.105	0.0869	0.0784	0.221	0.0380	0.0354	0.415
TPH-DRO			mg/kg	9.18	9.88	39.9	34.6	33.5	40.5	10.3
TPH-ORO			mg/kg	44.5	55.1	180	120	117	116	34.9
TPH	500	500	mg/kg	53.8	65.1	220	155	151	157	45.6
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	ND	ND	ND	ND	ND	ND	0.00117
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	NA	NA	NA	NA

NOTES:
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J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210419-J17E (MW01)@20-21'	20210419-J17E (MW01)@30.5-32'	20210419-J17E (MW01)@40-41.5'	20210419-J17E (MW01)@50-51'	20210419-J17E (MW01)@60-61'	20210419-J17E (MW01)@70-71.5'	20210420-J17E (MW02)@10-11'
Sample Date				4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/20/2021
Sample Depth (feet)				20-21	30.5-32	40-41.5	50-51	60-61	70-71.5	10-11
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	11.3	9.68	7.18	10.1	6.95	11.2	10.9
Barium	15,000	82 (M)	mg/kg	222	243	148	196	273	206	225
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.423	0.348	0.383	0.287	0.440	0.271	0.424
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	12.6	19.9	13.4	18.2	15.1	15.8	15.0
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND	ND	0.838	1.92
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	9.26	8.96	8.80	8.83	9.17	8.98	9.07
SAR	<6	<6	unitless	1.03	1.11	0.911	1.48	3.54	2.51	2.15
TPH-GRO			mg/kg	0.290	0.186	0.341	0.373	ND	ND	0.0970
TPH-DRO			mg/kg	14.0	21.5	8.76	5.05	36.5	46.8	11.8
TPH-ORO			mg/kg	82.2	91.0	23.4	26.9	160	158	48.4
TPH	500	500	mg/kg	96.5	112.7	32.5	32.3	196.5	204.8	60.3
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.00123	0.00125	ND	ND	0.00193	0.00155	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA

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

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210420-J17E (MW02)@20-21.5'	20210420-J17E (MW02)@30-31.5'	20210420-J17E (MW02)@40-41'	20210420-J17E (MW02)@50-51'	20210420-J17E (MW02)@60-62'	20210823-J17E(MW03)@15-17'	20210823-J17E(MW03)@35-37'
Sample Date				4/20/2021	4/20/2021	4/20/2021	4/20/2021	4/20/2021	8/23/2021	8/23/2021
Sample Depth (feet)				20-21.5	30-31.5	40-41	50-51	60-62	15-17	35-37
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	9.41	9.34	12.3	9.35	22.1	16.9	13.9
Barium	15,000	82 (M)	mg/kg	146	171	215	171	208	312	199
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.440	0.351	0.468	0.397	0.334	0.426	0.453
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	16.3	18.6	15.5	21.4	16.2	20.5	15.7
Selenium	390	0.26 (M)	mg/kg	1.01	1.64	2.01	3.05	1.21	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.93	8.72	8.83	9.36	9.38	8.80	8.75
SAR	<6	<6	unitless	1.18	1.10	1.54	4.64	5.51	0.922	0.962
TPH-GRO			mg/kg	0.108	0.110	0.0791	0.101	0.0628	0.0558	ND
TPH-DRO			mg/kg	5.42	5.30	40.9	37.9	4.29	18.0	35.2
TPH-ORO			mg/kg	25.1	24.3	154	135	22.1	94.5	180
TPH	500	500	mg/kg	30.6	29.7	195.0	173.0	26.5	112.6	215
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	ND	ND	ND	0.00100	ND	ND	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/l - milligrams per liter
mg/kg - milligrams per kilogram
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TPH-ORO - total petroleum hydrocarbons- oil range organics
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TPH-DRO - total petroleum hydrocarbons-diesel range organics
TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO
NA - analyte not analyzed
ND - analyte not detected
R - risk based
MCL - maxium containment level (M)

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210823-J17E(MW03)@40-42'	20210823-J17E(MW03)@50-52'	20210824-J17E(MW03)@60-62'	20210825-J17E(MW04)@15-17'	20210825-J17E(MW04)@20-22'	20210825-J17E(MW04)@35-37'	20210825-J17E(MW04)@45-47'
Sample Date				8/23/2021	8/23/2021	8/24/2021	8/25/2021	8/25/2021	8/25/2021	8/25/2021
Sample Depth (feet)				40-42	50-52	60-62	15-17	20-22	35-37	45-47
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	14.8	9.83	8.00	11.4	15.8	6.73	10.3
Barium	15,000	82 (M)	mg/kg	213	323	193	242	251	224	205
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.431	0.297	0.449	0.621	0.353	0.305	0.447
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	24.4	22.7	16.6	14.4	16.5	15.9	7.86
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND	0.860	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.50	8.50	8.60	8.82	8.97	8.77	8.61
SAR	<6	<6	unitless	1.01	1.06	2.57	0.752	0.926	0.692	0.668
TPH-GRO			mg/kg	0.0363	ND	0.0466	0.0460	0.0506	0.0294	ND
TPH-DRO			mg/kg	20.9	13.4	24.7	ND	17.3	ND	ND
TPH-ORO			mg/kg	105	59.4	92.5	0.478	87.0	1.37	1.17
TPH	500	500	mg/kg	126	72.8	117	0.524	104	1.40	1.17
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	ND	ND	ND	ND	0.00113	ND	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	0.00454	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA

NOTES:
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TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210825-J17E(MW04)@50-52'	20210902-J17E(MW04)@60-61.5'	20210825-J17E(MW05)@10-12'	20210825-J17E(MW05)@20-22'	20210825-J17E(MW05)@35-37'	20210825-J17E(MW05)@45-47'	20210825-J17E(MW05)@55-57'
Sample Date				8/25/2021	9/2/2021	8/25/2021	8/25/2021	8/25/2021	8/25/2021	8/25/2021
Sample Depth (feet)				50-52	60-61.5	10-12	20-22	35-37	45-47	55-57
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	8.28	9.38	7.08	12.6	6.90	10.6	6.88
Barium	15,000	82 (M)	mg/kg	199	300	197	196	188	262	118
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.307	1.13	0.239	0.410	0.375	0.503	0.294
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	13.3	14.8	7.11	14.5	13.0	12.0	17.2
Selenium	390	0.26 (M)	mg/kg	ND	1.37	ND	ND	ND	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.58	8.51	8.63	8.56	8.48	8.58	8.32
SAR	<6	<6	unitless	0.738	2.23	1.10	1.28	0.878	0.872	0.767
TPH-GRO			mg/kg	0.0339	0.469	0.0480	0.0709	0.0553	0.0294	ND
TPH-DRO			mg/kg	ND	98.2	4.18	3.94	ND	32.2	ND
TPH-ORO			mg/kg	0.349	335	19.2	18.0	0.289	129	0.577
TPH	500	500	mg/kg	0.383	434	23.4	22.0	0.344	161	0.577
Benzene	1.2	0.0026 (M)	mg/kg	ND	0.00623	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	0.0563	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	0.00173	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	ND	0.0188	ND	ND	ND	ND	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA

NOTES:
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TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210826-J17E(MW06)@15-17'	20210826-J17E(MW06)@20-22'	20210826-J17E(MW06)@35-37'	20210826-J17E(MW06)@45-47'	20210826-J17E(MW06)@55-57'	20210824-J17E(MW07)@15-17'	20210824-J17E(MW07)@25-27'
Sample Date				8/26/2021	8/26/2021	8/26/2021	8/26/2021	8/26/2021	8/24/2021	8/24/2021
Sample Depth (feet)				15-17	20-22	35-37	45-47'	55-57'	15-17	25-27
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	12.7	8.91	7.27	7.72	10.0	17.7	20.2
Barium	15,000	82 (M)	mg/kg	320	191	236	257	149	274	264
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.251	0.436	0.400	0.358	0.284	0.374	0.472
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	12.6	15.4	13.7	13.0	18.1	16.5	24.4
Selenium	390	0.26 (M)	mg/kg	ND	ND	0.940	0.830	ND	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.97	8.70	8.82	8.78	8.77	8.34	8.56
SAR	<6	<6	unitless	0.859	0.828	0.959	2.20	3.07	0.906	1.01
TPH-GRO			mg/kg	0.291	0.314	1.29	0.152	0.150	0.106	0.0851
TPH-DRO			mg/kg	12.9	5.53	32.6	2.48	ND	7.44	23.3
TPH-ORO			mg/kg	52.3	21.0	148	8.17	2.84	26.4	139
TPH	500	500	mg/kg	65.5	26.8	182	10.8	2.99	33.9	162
Benzene	1.2	0.0026 (M)	mg/kg	0.000550	ND	0.00117	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	0.00168	ND	0.00340	ND	0.00138	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.00113	ND	0.00202	ND	0.000900	ND	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA

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

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210824-J17E(MW07)@35-37'	20210824-J17E(MW07)@45-47'	20210824-J17E(MW07)@55-57'	20210824-J17E(MW07)@60-62'	20210831-J17E(MW08)@20-21.5'	20210831-J17E(MW08)@30-31.5'	20210831-J17E(MW08)@40-41.5'
Sample Date				8/24/2021	8/24/2021	8/24/2021	8/24/2021	8/31/2021	8/31/2021	8/31/2021
Sample Depth (feet)				35-37	45-47	55-57	60-62	20-21.5	30-31.5	40-41.5
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	13.1	13.0	9.30	7.39	17.0	13.4	8.36
Barium	15,000	82 (M)	mg/kg	306	272	143	236	518	260	450
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.380	0.297	0.371	0.347	0.375	0.522	0.439
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	16.8	18.1	20.6	13.7	17.7	14.9	12.4
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND	2.85	2.73	2.78
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.63	8.20	8.42	8.68	9.44	9.90	10.0
SAR	<6	<6	unitless	1.04	1.13	1.28	1.86	19.3	10.9	26.7
TPH-GRO			mg/kg	0.0926	0.302	0.0785	0.136	374	1.27	0.842
TPH-DRO			mg/kg	35.5	32.9	ND	13.9	515	36.2	32.6
TPH-ORO			mg/kg	177	161	5.63	62.7	65.1	136	137
TPH	500	500	mg/kg	213	194	5.71	76.7	954	173	170
Benzene	1.2	0.0026 (M)	mg/kg	ND	0.00165	ND	ND	ND	0.00145	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	0.00163	ND	0.0352	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	0.262	0.0185	0.00125
Total Xylenes	58	9.9 (M)	mg/kg	ND	ND	ND	ND	6.31	0.428	0.0309
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	4.64	0.108	0.00750
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	4.98	0.123	0.00825
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	0.0893	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	0.878	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	1.96	0.00760	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	1.08	0.00659	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA

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

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES							
				20210831-J17E(MW08)@50-52'	20210831-J17E(MW08)@60-62'	20210831-J17E(MW08)@65-66.3'	20210830-J17E(MW09)@20-22'	20210830-J17E(MW09)@30-32'	20210830-J17E(MW09)@45-47'	20210830-J17E(MW09)@55-57'	20210830-J17E(MW09)@65-67'
Sample Date				8/31/2021	8/31/2021	8/31/2021	8/30/2021	8/30/2021	8/30/2021	8/30/2021	8/30/2021
Sample Depth (feet)				50-52	60-62	65-66.3	20-22	30-32	45-47	55-57	65-67
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	11.8	8.69	7.87	9.51	104	9.50	10.6	15.5
Barium	15,000	82 (M)	mg/kg	310	238	272	207	231	250	252	304
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.416	0.326	0.376	0.554	0.613	0.969	0.428	0.471
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	17.9	12.6	20.0	18.5	15.8	20.9	36.6	17.1
Selenium	390	0.26 (M)	mg/kg	1.94	0.789	2.43	1.05	1.61	3.96	1.74	2.86
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	9.08	8.39	8.34	8.47	8.48	8.85	8.79	8.54
SAR	<6	<6	unitless	39.4	18.2	5.70	1.88	1.23	4.31	4.92	2.91
TPH-GRO			mg/kg	2.79	1.01	0.144	0.116	0.135	0.831	0.161	0.0731
TPH-DRO			mg/kg	12.8	4.19	68.3	5.17	6.10	24.0	2.40	53.7
TPH-ORO			mg/kg	55.4	16.3	187	15.3	15.4	88.9	8.91	156
TPH	500	500	mg/kg	71.0	21.5	255	20.6	21.6	114	11.5	210
Benzene	1.2	0.0026 (M)	mg/kg	0.000825	0.00190	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.0181	0.00393	0.00500	ND	ND	ND	ND	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	0.00370	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	0.00418	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/l - milligrams per liter
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
SAR - sodium adsorption ratio
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MCL - maxium containment level (M)

TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES							
				20210902-J17E(MW10)@5-7'	20210902-J17E(MW10)@15-17'	20210902-J17E(MW10)@25-27'	20210902-J17E(MW10)@35-37'	20210902-J17E(MW10)@45-47'	20210902-J17E(MW10)@55-56.5'	20210902-J17E(MW10)@65-66.3'	20210901-J17E(AS01)@25-27'
Sample Date				9/2/2021	9/2/2021	9/2/2021	9/2/2021	9/2/2021	9/2/2021	9/2/2021	9/1/2021
Sample Depth (feet)				5-7	15-17	25-27	35-37	45-47	55-56.5	65-66.3	25-27
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	5.24	10.6	10.9	7.41	5.73	12.2	9.35	15.3
Barium	15,000	82 (M)	mg/kg	303	238	212	168	183	313	255	274
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.324	0.414	0.320	0.439	0.515	0.322	0.347	0.445
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	11.2	14.2	27.3	17.2	11.9	15.4	14.5	16.3
Selenium	390	0.26 (M)	mg/kg	0.927	ND	1.33	ND	1.42	1.75	1.05	1.51
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.46	9.01	9.19	9.07	9.00	9.26	8.90	8.65
SAR	<6	<6	unitless	0.688	0.861	2.16	4.58	6.24	5.03	1.79	0.964
TPH-GRO			mg/kg	0.873	0.574	0.660	0.474	0.279	0.838	0.521	2,550
TPH-DRO			mg/kg	4.76	23.1	44.0	43.7	3.77	49.3	63.7	1,110
TPH-ORO			mg/kg	26.8	122	211	42.1	8.29	222	249	240
TPH	500	500	mg/kg	32.4	146	256	86.3	12.3	272	313	3900
Benzene	1.2	0.0026 (M)	mg/kg	0.00397	0.00728	0.00633	0.00375	0.00146	0.0110	0.0133	0.755
Toluene	490	0.69 (M)	mg/kg	0.118	0.140	0.243	0.0636	0.0165	0.109	0.134	24.0
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.00560	0.00532	0.0123	0.00347	0.000792	0.00365	0.00411	3.68
Total Xylenes	58	9.9 (M)	mg/kg	0.0743	0.0642	0.144	0.0394	0.00920	0.0403	0.0436	63.3
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	0.00255	0.00208	0.00353	ND	ND	ND	ND	12.3
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	0.00200	0.00223	0.00340	ND	ND	ND	ND	9.91
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.133
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	1.12
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	2.74
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	1.11
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/l - milligrams per liter
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TABLE 3

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

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES							
				20210901-J17E(AS01)@35-37'	20210901-J17E(AS01)@40-41.5'	20210901-J17E(AS01)@50-52'	20210901-J17E(AS01)@60-61.5'	20210901-J17E(AS01)@68-70'	20210827-J17E(SVE01)@25-27'	20210827-J17E(SVE01)@35-37'	20210827-J17E(SVE01)@45-47'
Sample Date				9/1/2021	9/1/2021	9/1/2021	9/1/2021	9/1/2021	8/27/2021	8/27/2021	8/27/2021
Sample Depth (feet)				35-37	40-41.5	50-52	60-61.5	68-70	25-27	35-37	45-47
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	17.7	10.9	8.30	7.42	30.1	7.70	8.47	7.86
Barium	15,000	82 (M)	mg/kg	210	270	255	205	265	212	307	195
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.450	0.351	0.250	0.247	0.432	0.397	0.320	0.422
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	14.3	19.4	14.6	13.6	19.1	13.6	12.6	12.5
Selenium	390	0.26 (M)	mg/kg	1.78	1.34	1.12	ND	1.74	ND	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.66	8.70	8.70	8.61	8.75	8.30	8.58	8.34
SAR	<6	<6	unitless	0.988	1.10	1.22	5.07	2.09	1.59	1.40	2.15
TPH-GRO			mg/kg	926	708	826	36.8	12.0	0.0445	4.54	4.13
TPH-DRO			mg/kg	1,550	558	311	10.2	62.6	21.6	71.6	2.46
TPH-ORO			mg/kg	308	282	55.5	23.9	220	30.4	284	8.69
TPH	500	500	mg/kg	2784	1548	1193	70.9	295	52.0	360	15.3
Benzene	1.2	0.0026 (M)	mg/kg	1.30	0.611	0.0875	0.000838	0.00455	0.0111	0.00960	0.00215
Toluene	490	0.69 (M)	mg/kg	50.1	30.7	5.98	0.0169	0.132	0.214	0.131	0.00599
Ethylbenzene	5.8	0.78 (M)	mg/kg	7.31	4.94	0.976	0.00454	0.0170	0.132	0.0769	0.00683
Total Xylenes	58	9.9 (M)	mg/kg	113	76.7	17.2	0.0611	0.251	1.84	0.779	0.0211
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	23.2	15.6	3.78	0.0221	0.0393	0.471	0.203	0.0113
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	22.4	14.8	3.29	0.0217	0.0332	0.492	0.213	0.0126
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	0.100	0.0420	0.00943	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	1.10	0.705	0.168	0.00787	ND	0.0103	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	2.57	1.79	0.464	0.0172	0.00468	0.0266	0.00852	ND
Naphthalene	2	0.0038 (R)	mg/kg	1.28	0.946	0.204	0.0122	ND	0.0157	0.00471	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA

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

TABLE 3

SOIL BORING SOIL ANALYTICAL RESULTS

J17E DUMPLINE

GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES	
				20210827~J17E(SVE01)@55-57'	20210827~J17E(SVE01)@63-65'
Sample Date				8/27/2021	8/27/2021
Sample Depth (feet)				55-57	63-65
Sample Type				Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	9.59	7.99
Barium	15,000	82 (M)	mg/kg	316	259
Boron	2	2	mg/l	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.329	0.356
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA
Nickel	1,500	26 (R)	mg/kg	20.2	18.4
Selenium	390	0.26 (M)	mg/kg	ND	ND
Silver	390	0.8 (R)	mg/kg	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA
EC	<4	<4	mmhos/cm	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.88	8.51
SAR	<6	<6	unitless	5.99	2.26
TPH-GRO			mg/kg	2.18	0.899
TPH-DRO			mg/kg	46.3	86.6
TPH-ORO			mg/kg	181	269
TPH	500	500	mg/kg	229	356
Benzene	1.2	0.0026 (M)	mg/kg	0.00202	0.000750
Toluene	490	0.69 (M)	mg/kg	0.00455	0.00260
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.00580	0.00150
Total Xylenes	58	9.9 (M)	mg/kg	0.0115	0.00428
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	0.00515	0.00235
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	0.00613	0.00280
Anthracene	1,800	5.8 (R)	mg/kg	NA	NA
Acenaphthene	360	0.55 (R)	mg/kg	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA
Fluorene	240	0.54 (R)	mg/kg	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA

NOTES:

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

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

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

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 4

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

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5 -Trimethylbenzene (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
20210330-J17E (SB-01)	3/30/2021	1.23	0.868	ND	0.336	ND	ND	ND	9.04	103	813
20210331-J17E (SB02-TB)	3/31/2021	54.7	21.4	1.86	10.4	ND	0.663	0.587	22.0	96.1	910
20210402-J17E (SB02-TB)	4/02/2021	29.4	10.9	0.707	3.40	ND	ND	0.149	13.9	102	886
20211004-J17E (SB02-TB)	10/04/2021	186.0	94.4	1.180	14.40	ND	ND	0.291	9.18	96.7	869
20210421-J17E (MW01)	4/21/2021	ND	ND	ND	ND	ND	ND	ND	214	268	1,090
20211004-J17E (MW01)	10/04/2021	0.147	ND	ND	ND	ND	ND	ND	44.5	117	834
20210427- J17E (MW02)	4/27/2021	0.238	0.440	0.192	0.657	ND	ND	ND	6.81	98.6	910
20211004- J17E (MW02)	10/04/2021	0.101	ND	ND	ND	ND	ND	ND	6.73	98.3	833
20210826-J17E (MW03)	8/26/2021	0.236	1.24	0.406	1.51	ND	0.495	0.139	9.46	101	829
20211004-J17E (MW03)	10/04/2021	ND	ND	ND	ND	ND	ND	ND	7.96	97.8	797
20210907-J17E (MW04)	9/07/2021	ND	ND	ND	0.188	ND	ND	ND	10.5	98.9	772
20211004-J17E(MW04)	10/04/2021	ND	ND	ND	ND	ND	ND	ND	10.2	96.7	827
20210827-J17E (MW05)	8/27/2021	ND	ND	ND	ND	ND	ND	ND	10.3	101	885
20211004-J17E (MW05)	10/04/2021	0.098	ND	ND	ND	ND	ND	ND	10.1	95.3	829
20210831-J17E (MW06)	8/31/2021	ND	ND	ND	ND	ND	ND	ND	11.3	96.5	833
20211004-J17E (MW06)	10/04/2021	0.104	ND	ND	ND	ND	ND	ND	10.4	98.1	777
20210826-J17E (MW07)	8/26/2021	0.128	0.342	ND	0.446	ND	ND	ND	8.94	103	843
20211004-J17E (MW07)	10/04/2021	0.161	ND	ND	0.232	ND	ND	ND	8.97	97.8	516
20210907-J17E (MW08)	9/07/2021	ND	ND	ND	ND	ND	ND	ND	10.3	100	803
20211004-J17E (MW08)	10/04/2021	0.134	ND	ND	ND	ND	ND	ND	10.7	95.3	1,230
20210907-J17E (MW09)	9/07/2021	0.196	0.374	ND	0.622	ND	ND	ND	11.5	102	797
20211004-J17E (MW09)	10/04/2021	0.111	ND	ND	ND	ND	ND	ND	11.8	99.8	800
20210907-J17E (MW10)	9/07/2021	ND	ND	ND	0.236	ND	ND	ND	10.0	100	819
20211004-J17E (MW10)	10/04/2021	ND	ND	ND	ND	ND	ND	ND	9.79	99.1	824
COGCC CONCENTRATION LEVELS		5	560	700	1,400	140	67	67	1.25 x Background	1.25 x Background	1.25 x Background

Notes:
ND - analyte not detected
BOLD - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
µg/L - micrograms per liter
mg/L - millgrams per liter
NA - analyte not analyzed
TDS - total dissolved solids

ENCLOSURE A – SOIL BORING LOGS



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-03
COMPLETION DATE: 8/23-24/21
TD (ft bgs): 70'
DTW (ft bgs): 61.3'
SCREEN SLOT: 0.010"
CASING LENGTH: 60'
SCREEN LENGTH: 10'
LOGGED BY: Parker Coit
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.1		dry	MW03 @15-17'	/	0			0' - 10' - hydrovac pothole.	
					5				
					10	GM		10' - 12' - SILTY GRAVEL, loam, cobble up to 1", slight staining, no odor, poor recovery.	
2.4				/	15	ML		15' - 16' - SILTY MUDSTONE, brown, poor recovery.	
						GM		16' - 17' - SILTY GRAVEL, slight staining, no odor, poor recovery.	
1.7				/	20	GM		18' - 20' - SILTY GRAVEL, slight staining, no odor, poor recovery.	
					25	GM		24' - 26' - SILTY GRAVEL, tan to brown, sandy, slight clay, poor sorting.	
7.6				/	30	GM		30' - 32' - SILTY GRAVEL, brown, large cobble, sandy, slight clay.	
1.3				/	35				



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Parker Coit
BORING/WELL ID: MW-03 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/23-24/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 70' **DRILLED BY:** GDI
DTW (ft bgs): 61.3' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 60' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
2.0			MW03 @35-37'	/	35	SM		35' - 37' - SILTSTONE, brown, weathered, slight gravel, interbedded gray sandstone.	
0.5			MW03 @40-42'	/	40	CL		40' - 42' - CLAY, brown, weathered, silt and sandy, moist.	
0.0				/	45	GM		44' - 46' - SILTY GRAVEL, brown, 1" cobbles, sandy, slight clay.	
0.8		moist	MW03 @50-52'	/	50	CL		50' - 52' - CLAY, brown, weathered, silt and sandy, weathered basalt cobbles, moist.	
2.6				/	55	SM		54' - 56' - SILTY SAND, with clay layers, moist, weathered interbedded cobbles.	
7.0			MW03 @60-62'	/	60	ML		60' - 62' - MUDSTONE, brown, weathered, fine sandstone layers, interbedded cobbles.	
9.2		wet		/	65	ML		64' - 66' - MUDSTONE, brown, weathred, wet, interbedded sandstone in water.	
1.0				/	70	SC		68' - 70' - CLAYEY SAND, wet, weathered siltstone/mudstone layers.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-04
COMPLETION DATE: 8/25/21
TD (ft bgs): 66.5'
DTW (ft bgs): 60.36'
SCREEN SLOT: 0.010"
CASING LENGTH: 56.5'
SCREEN LENGTH: 10'

LOGGED BY: Parker Coit
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 5.5' - hydrovac pothole.	
0.7		dry		/	10	GM		10' - 12' - SANDY GRAVEL, dark brown, loam, with weathered silt mudstone.	
0.6			MW04 @15-17'	/	15	ML		15' - 17' - SILTY, blackish brown to tan brown, interbedded fine sandstone, dry, very hard, light gray staining.	
0.1			MW04 @20-22'	/	20	Mudstone		20' - 22' - MUDSTONE, brown to gray, weathered, fissile, gravel, no odor.	
0.4				/	25	SP		24' - 26' - SAND, light gray, fine to medium grained, 1' layer with silty brown mudstone, dry, gravels.	
0.5				/	30	ML		30' - 32' - SILT, brown, mudstone, no odor, 6" boulder at 30' bgs, poor recovery.	



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Parker Coit
BORING/WELL ID: MW-04 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/25/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 66.5' **DRILLED BY:** GDI
DTW (ft bgs): 60.36' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 56.5' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0			MW04 @35-37'	/	35	SM		35' - 37' - SILTY SAND, brown, fine to medium sand, unconsolidated, slight mudstone.	
9.2				/	40	Mudstone		38' - 40' - MUDSTONE, dark brown, weathred, with sand and silt, slight gravel.	
0.2			MW04 @45-47'	/	45	Mudstone		45' - 47' - MUDSTONE, brown to light gray, weathred, with sand and silt, very hard, interbedded gray sandstone.	
4.2	moist		MW04 @50-52'	/	50	SM		50' - 52' - SILTY SAND, dark brown, soft, moist, slight mudstone, low plasticity.	
13.2				/	55	ML		55' - 57' - SILTY CLAY, dark brown, moist.	
1.3	wet		MW04 @60-61.5'	/	60	ML		60' - 61.5' - SILT, shale pieces, hard, fissle, non plastic, basalt pebbles on end of split spoon.	
1.2				/		SC		61.5' - 64' - CLAYEY SAND, moderately sorted sand, non plastic.	
					65				



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Parker Coit
BORING/WELL ID: MW-05 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/25/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 68' **DRILLED BY:** GDI
DTW (ft bgs): 61.6' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 58' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 8.5' - hydrovac pothole.	
1.5		dry	MW05 @10-12'	/	10	ML		10' - 12' - SILTSTONE, weathred, fissile, gravel and cobbles, dry, no odor, interbedded sandstone.	
0.9				/	15	SM		14' - 16' - SANDSTONE, medium to fine grained, interbedded gray mudstone, fissile.	
2.5			MW05 @20-22'	/	20	mudstone		20' - 22' - MUDSTONE, dark brown, weathred, silty, organics, dark gray to black silty sandstone, no odor.	
0.9		moist		/	25	mudstone		24' - 26' - MUDSTONE, gray, weathered, silty, with sand and gravel, moist, slight plasticity.	
1.6				/	30	GM		29' - 31' - SANDY GRAVEL, basalt gravel, boulder layer with sands.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-06
COMPLETION DATE: 8/26/21
TD (ft bgs): 70'
DTW (ft bgs): 64'
SCREEN SLOT: 0.010"
CASING LENGTH: 60'
SCREEN LENGTH: 10'

LOGGED BY: Parker Coit
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 8.5' - hydrovac pothole.	
1.5		dry		/	10	GM		10' - 12' - GRAVEL, 1" cobbles, with mudstone, poor recovery.	
4.4			MW06 @15-17'	/	15	ML		15' - 17' - MUDSTONE, gray, weathered, fissile, no odor, reddish fine sand layers.	
7.5		moist	MW06 @20-22'	/	20	ML		20' - 22' - SANDY SILT, weathered, mudstone/clay, low plasticity, pea gravels, moist.	
1.5				/	25	ML		25' - 27' - MUDSTONE, brown, silty and sandy, fissile, gray rusty interbeds, basalt grades up to 1".	
5.0				/	30	SM		30' - 32' - SILTY SAND, reddish brown, fine grained, slight clay, loose, moist.	
46.5			MW06 @35-37'	/	35	ML		35' - 37' - MUDSTONE, brown gray, weathered, silty, fissile, no odor.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Parker Coit
BORING/WELL ID: MW-06 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/26/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 70' **DRILLED BY:** GDI
DTW (ft bgs): 64' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 60' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
4.5			MW06 @45-47'	/	40	GM		40' - 42' - SANDSTONE, cobbles, caliche, slight weathered mudstone.	
9.5				/	45	CL		45' - 47' - CLAY, silty and sandy, moist, with weathered mudstone, slight plasticity, tacky, rust colors.	
31.5				/	50	CL		50' - 52' - MUDSTONE, gray, weathered, hard, silt and sand, top fissile and shaley.	
18.8	wet		MW06 @55-57'	/	55	ML		55' - 57' - SANDY SILT, reddish brown, fine grained, clay, wet.	
3.5				/	60	ML		60' - 62' - SANDY SILT, reddish brown, fine grained, clay, wet, interbedded vasicular basalt gravel at about 1".	
0.8				/	65	mudstone		65' - 67' - MUDSTONE, weathred, clayey matrix, wet.	
1.1				/	70	mudstone		70' - 72' - MUDSTONE, dark brown, weathred, clayey matrix, wet, bedrock, very hard at 71' bgs.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-07
COMPLETION DATE: 8/24/21
TD (ft bgs): 67'
DTW (ft bgs): 64.8'
SCREEN SLOT: 0.010"
CASING LENGTH: 57'
SCREEN LENGTH: 10'

LOGGED BY: Parker Coit
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 10' - hydrovac pothole.	
		dry		/	10	GM		10' - 12' - no recovery	
1.7		moist	MW07 @15-17'	/	15	ML		15' - 17' - SANDY SILT, brown, mudstone/clay, moist.	
1.1		dry		/	20	ML		20' - 22' - SANDY SILT, tan to brown, interbedded gray fissile clay, 6" clay layer.	
2.8			MW07 @25-27'	/	25	mudstone		25' - 27' - MUDSTONE, light gray, weathered, interbedded sandstone, no odor, slight rust.	
0.8		moist		/	30	ML		30' - 32' - SANDY SILT, dark brown, fine to medium grained, moist.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Dustin Held
BORING/WELL ID: MW-08 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/31/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 70' **DRILLED BY:** GDI
DTW (ft bgs): 65.1' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 60' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 20' - not logged, former excavation footprint	
					5				
					10				
					15				
1,920		dry	MW08 @20-21.5'	/	20	ML		20' - 21.5' - CLAYEY SILT, gray and black, interbedded , non plastic.	
423				/	25	ML		25' - 26.5' - CLAYEY SILT, gray, few gravels, staining, low plasticity.	
68.5			MW08 @30-31.5'	/	30	ML		30' - 31.5' - CLAYEY SILT, gray, few gravels, staining, low plasticity.	
					35				



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-08
COMPLETION DATE: 8/31/21
TD (ft bgs): 70'
DTW (ft bgs): 65.1'
SCREEN SLOT: 0.010"
CASING LENGTH: 60'
SCREEN LENGTH: 10'

LOGGED BY: Dustin Held
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
66.5		moist	MW08 @40-41.5'	/	35	ML		35' - 36.5' - CLAYEY SILT, gray, low plasticity, few gravels, sandy, staining, basalt at 36' bgs.	
						SW		36.5' - 37' - SAND, fine grained, soft, moist.	
78.2				/	40	GM		40' - 41.5' - SILTY GRAVEL, gray, interbedded shale pieces, non plastic, staining.	
			MW08 @50-52'						
257.5				/	45	GM		45' - 47' - SILTY GRAVEL, gray, interbedded shale pieces, non plastic.	
61.7		moist		/	50	CH		50' - 50.5' - CLAY, medium plasticity, thick, moist.	
						ML		50.5' - 51.5' - CLAYEY SILT, some gravels, non plastic.	
						SW		51.5' - 52' - SAND, fine grained, well sorted, soft.	
64.7			MW08 @60-62'	/	55	GM		55' - 57' - SILTY GRAVEL, few sands, some shale pieces, non plastic.	
7.5				/	60	SC		60' - 62' - CLAYEY SAND, well sorted, soft, moist.	
			MW08 @65-66.3'						
3.2		wet		/	65	ML		65' - 66.3' - GRAVELEY SILT, wet at 66' bgs, shale pieces, fissile, non plastic.	
2.9				/		ML		65' - 66.3' - GRAVELEY SILT, wet, shale pieces, fissile, non plastic.	
					70				



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Parker Coit
BORING/WELL ID: MW-09 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/30/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 70' **DRILLED BY:** GDI
DTW (ft bgs): 65' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 60' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 20' - excavation footprint, not logged.	
					5				
					10				
					15				
2.8	moist		MW09 @20-22'	/	20	ML		20' - 22' - SANDY SILT, dark brown, with gravels, clay, moist, slight gray staining.	
					25				
4.7				/	25	ML		25' - 27' - SILTY MUDSTONE, weathered, fissile, silt and sand, moist.	
					30				
2.2			MW09 @30-32'	/	30	CL		30' - 32' - CLAY, dark brown, low plasticity, moist, no odor.	
					35				



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-09
COMPLETION DATE: 8/30/21
TD (ft bgs): 70'
DTW (ft bgs): 65'
SCREEN SLOT: 0.010"
CASING LENGTH: 60'
SCREEN LENGTH: 10'

LOGGED BY: Parker Coit
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
22.1				/	35	GM		35' - 37' - GRAVEL, basalt, sandstone, and some weathered mudstone.	
1.4				/	40	ML		40' - 42' - SANDY SILT, white to gray, weathered mudstone, fissile.	
26.6			MW09 @45-47'	/	45	ML		45' - 47' - MUDSTONE, brown to rusty, weathered, silt and sand, with gravel.	
3.2		moist		/	50	ML		50' - 52' - MUDSTONE, very reddish to brown, silty, low plasticity, moist.	
6.9			MW09 @55-57'	/	55	ML		55' - 57' - SILTY MUDSTONE, very reddish to brown, low plasticity, moist, interbedded fine sand layers.	
3.5				/	60	ML		60' - 62' - SILTY MUDSTONE, weathered, sandy, moist, 6" sandy layer.	
2.2			MW09 @65-67'	/	65	ML		65' - 67' - SILTY MUDSTONE, weathered, fissile, sandy, with gravel.	
0.0				/	70	GM		68' - 70' - no recovery, on cobbles, very hard.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: MW-10
COMPLETION DATE: 9/2/21
TD (ft bgs): 70'
DTW (ft bgs): 65'
SCREEN SLOT: 0.010"
CASING LENGTH: 60'
SCREEN LENGTH: 10'

LOGGED BY: Dustin Held
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Grout

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.5		dry	MW10 @5-7'	/	5	ML		5' - 7' - SILT, tan to white, powdery, non plastic, trace pebbles, sandstone pebbles at 6-7' bgs.	
1.9				/	10	ML		10' - 12' - SILT, brown, non plastic, tight, trace gravels, sand layer at 11.75 to 12' bgs.	
1.5			MW10 @15-17'	/	15	ML		15' - 17' - SILT, brown, non plastic, tight, trace shale and gravels.	
1.1				/	20	ML		20' - 22' - SILT, brown, non plastic, tight, trace shale and gravels.	
0.9			MW10 @25-27'	/	25	ML		25' - 25.5' - SILT, brown, non plastic, tight, trace shale and gravels.	
						GP		25.5' - 27' - GRAVEL, sandy, some silt, non plastic, with basalt and sandstone.	
0.4		moist		/	30	ML		30' - 31.5' - GRAVELY SILT, shale pieces, moist, non plastic.	
						SW		31.5' - 32' - SAND, well sorted	
					35				



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Dustin Held
BORING/WELL ID: MW-10 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 9/2/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 70' **DRILLED BY:** GDI
DTW (ft bgs): 65' **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 60' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 10' **SURFACE SEAL:** Grout

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0			MW10 @35-37'	/	35	ML		35' - 37' - SILT, non plastic, few gravels and shale pieces, gray, interbedded shale pieces, non plastic, staining.	
1.8				/	40	ML		40' - 42' - SILT, low plasticity, few pebbles, uniform	
0.9			MW10 @45-47'	/	45	ML		45' - 46' - SILT, low plasticity, few pebbles, uniform	
						SW		46' - 46.5' - SAND	
						CL		46.5' - 47' - CLAY, medium plasticity, few sands, moist.	
0.8				/	50	ML		50' - 52' - SILT, with shale pieces interbedded, fissile, non plastic, iron oxide.	
4.2			MW10 @55-56.5'	/	55	ML		55' - 56.5' - SILT, with shale pieces interbedded, non plastic, some sand.	
3.4				/	60	ML		60' - 62' - SILT, with shale pieces interbedded, non plastic, some sand.	
4.2	wet		MW10 @65-66.3'	/	65	GM		65' - 66.3' - SILTY GRAVEL, basalt pieces, shale pieces, non plastic, wet, zones in shale pieces.	
					70				



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508
BORING/WELL ID: SVE01
COMPLETION DATE: 8/27/21
TD (ft bgs): 63'
DTW (ft bgs): NA
SCREEN SLOT: 0.010"
CASING LENGTH: 43'
SCREEN LENGTH: 20'
LOGGED BY: Parker Coit
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: GDI
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: Sakrete

HOLE DIAMETER: 8.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 18' - boring starts 15' below pad surface	
					5				
					10				
					15				
1.535	dry			/	20	GM		18' - 20' - GRAVEL, gray to brown, 1" gravels in a silty clay matrix, staining, odor.	
					25	ML		25' - 27' - MUDSTONE, gray to brown, silty, moist, staining, odor, interbedded weathered mudstone.	
404			SVE01 @25-27'	/	30	CL		30' - 32' - SILTY CLAY, gray to black, sandy, 2" sandstone layer, staining.	
389				/					



Location Map



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: 31403501.006.0508 **LOGGED BY:** Parker Coit
BORING/WELL ID: SVE01 **SAMPLE METHOD:** Split Spoon
COMPLETION DATE: 8/27/21 **DRILL METHOD:** Hollow Stem Auger
TD (ft bgs): 63' **DRILLED BY:** GDI
DTW (ft bgs): NA **DETECTOR:** UltraRAE 3000
SCREEN SLOT: 0.010" **FILTER PACK:** 10-20 silica sand
CASING LENGTH: 43' **ANNULUS SEAL:** Bentonite Chips
SCREEN LENGTH: 20' **SURFACE SEAL:** Sakrete

HOLE DIAMETER: 8.25"

WELL DIAMETER: 2"

CASING TYPE: PVC

SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
245		moist	SVE01 @35-37'	/	35	ML		35' - 37' - MUDSTONE, brown to gray, weathered, silty, with fine grained hard sandstone layers.	
282				/	40	ML		40' - 42' - SANDY SILT, clay matrix, gray mudstone and sandstone layers, moist.	
114				/	45	CL		43' - 45' - CLAY, red, silt and sand, mudstone, moist.	
41.6			SVE01 @43-45'	/	50	CL		50' - 52' - CLAY, redish brown, silt and sand, some gravels, moist, weathered mudstone at bottom.	
91.4				/	55	CL		55' - 57' - SHALE, weathered, bedrock, basalt gravel.	
51.8				/	60	CL		55' - 57' - SHALE, weathered, bedrock, basalt gravel, moist, red clay layer.	
17.8			SVE01 @63-65'	/	65	ML		63' - 65' - MUDSTONE, brown, weathered, silty, fissile.	



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: TE050820038
BORING/WELL ID: SB03
COMPLETION DATE: 10/13-14/21
TD (ft bgs): 68.5'
DTW (ft bgs): 65.5'
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Dustin Held
SAMPLE METHOD: Split Spoon
DRILL METHOD: Solid Stem Auger
DRILLED BY: CO Drilling & Sampling
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

HOLE DIAMETER: 4.25"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.2		dry	SB03 @5-7'	/	5	ML		5' - 7' - SILT, white to brown, low plasticity, trace pebbles, trace clays.	
0.3				/	10	ML		10' - 12' - SILT, brown, with few interbedded pebbles, fine sand layer at 11 to 11.5' bgs.	
0.8			SB03 @15-17'	/	15	ML		15' - 17' - SILT, brown, interbedded pebbles, black cobble at 15' bgs.	
0.7		moist		/	20	ML		20' - 22' - SILT, brown, interbedded pebbles, moist at 21 to 22' bgs, sandy layer at 21.5 to 22' bgs.	
0.4			SB03 @25-27'	/	25	ML		25' - 27' - SILT, brown, sandy, non-plastic, with interbedded pebbles, moist.	
0.2		dry		/	30	ML		30' - 32' - SILT, brown, non-plastic, with interbedded pebbles, fine grained sands, sand at 31' to 31.5' bgs with silt.	
					35				



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: J17E Dumpline
PROJECT NO: TE050820038
BORING/WELL ID: SB03
COMPLETION DATE: 10/13-14/21
TD (ft bgs): 68.5'
DTW (ft bgs): 65.5'
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Dustin Held
SAMPLE METHOD: Split Spoon
DRILL METHOD: Hollow Stem Auger
DRILLED BY: CO Drilling & Sampling
DETECTOR: UltraRAE 3000
FILTER PACK: 10-20 silica sand
ANNULUS SEAL: Bentonite Chips
SURFACE SEAL: NA

HOLE DIAMETER: 8.25"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.4			SB03 @35-37'	/	35	ML		35' - 37' - SILT, brown, non-plastic, with interbedded pebbles, fine grained sands throughout.	
0.2				/	40	ML		40' - 42' - poor recovery, basalt cobble in shoe of splitspoon, no sample.	
0.2			SB03 @45-46.5'	/	45	ML		45' - 46.5' - SILT, brown, few sands, non-plastic, interbedded pebbles and fissile shale.	
0.1				/	50	GM		50' - 52' - SILTY GRAVEL, brown, sandstone and basalt, angular, interbedded fissile shale pieces.	
0.4			SB03 @55-57.5'	/	55	GM		55' - 57.5' - SILTY GRAVEL, brown, sandstone and basalt, angular, interbedded fissile shale pieces, unconsolidated fine grained sand with some clay from 56' to 57.2' bgs.	
0.2				/	60	GM		60' - 62' - SILTY GRAVEL, brown, sandstone and basalt, angular, interbedded fissile shale pieces, sand layer at 60' to 60.2' bgs and 61.7' to 61.8' bgs.	
0.2	wet		SB03 @65-67'	/	65	GM		65' - 67' - SILTY GRAVEL, brown, with shale pieces, non-plastic, wet at 65' to 66' bgs.	
0.1	moist		SB03 @67-68.5'	/		GM		67' - 68.5' - SILTY GRAVEL, brown, with shale pieces, non-plastic, wet at 67' to 67.5' bgs, moist at 67.5 to 68.5' bgs.	
					70				

ENCLOSURE B – AS/SVE PILOT TEST DATA

SVE PILOT TEST DATA FIELD MEASUREMENTS

Personnel: Dustin Held

Date: 9/17/2021

Extraction Test								
Test Start Time: 840						Test End Time: 950		
Test Extraction (Injection) Well						Observation Wells		
Wellhead Vacuum (InHg)	Wellhead Vacuum (IWC)	Wellhead Flowrate (cfm)	VOC Stack (ppm)	Stack Temp (°F)	Time (minutes)	MW-09	MW-08	SB02-TB
						Distance From Test Well (feet)		
						34	39.8	20
						Vacuum (IWC)		
10	136	50	726.4	72	3	1.6	0.05	1.8
		50	624	78	20	1.6	0.11	2.2
12	163	88	818	78	30	3.0	0.16	3.4
		88	845	80	40	3.4	0.18	3.7
6	82	50	404.2	83	55	2.5	0.16	2.6
		50	411.7	84	70	2.4	0.15	2.6
0	0	NA	NA	NA	NA	0.4	0.01	0.3
Combined AS/SVE Test 9/23/21								
3.5	48	20	412.1	97	30	0.19	0.04	0

Notes:

cfm - cubic feet per minute

InHg - inches mercury

IWC - inches water column

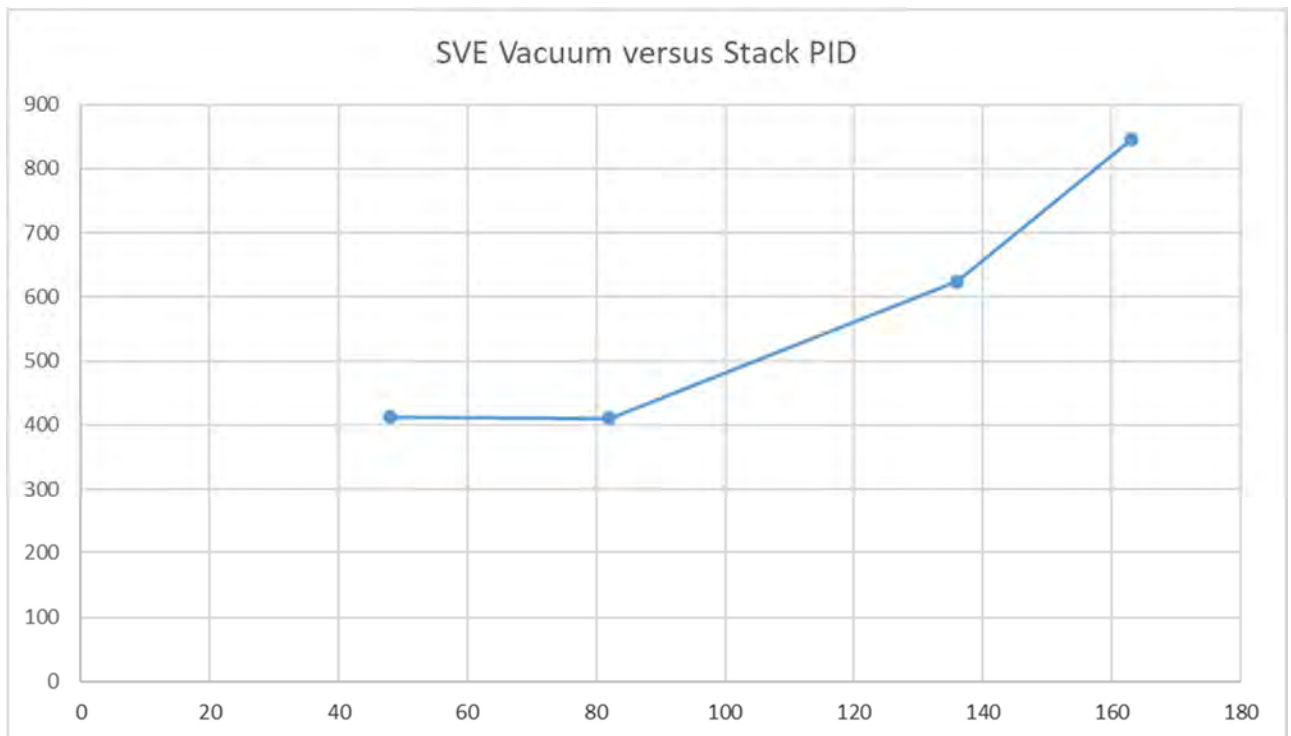
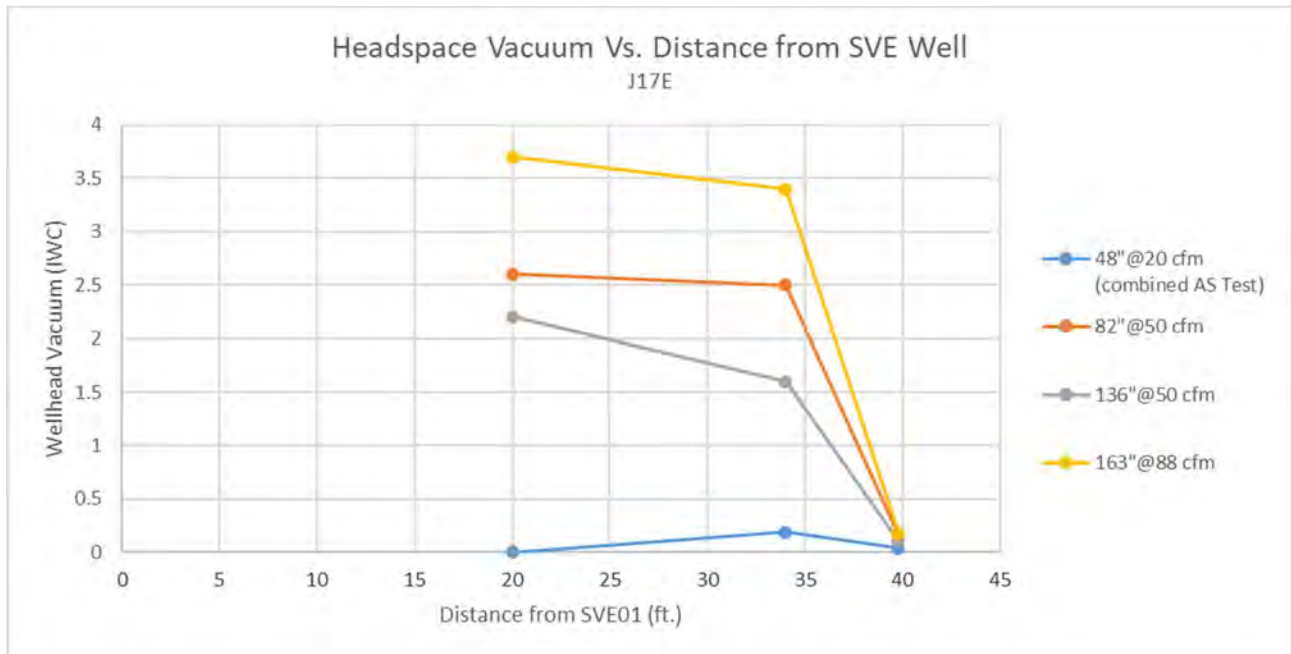
ppm - parts per million

°F - degrees Fahrenheit

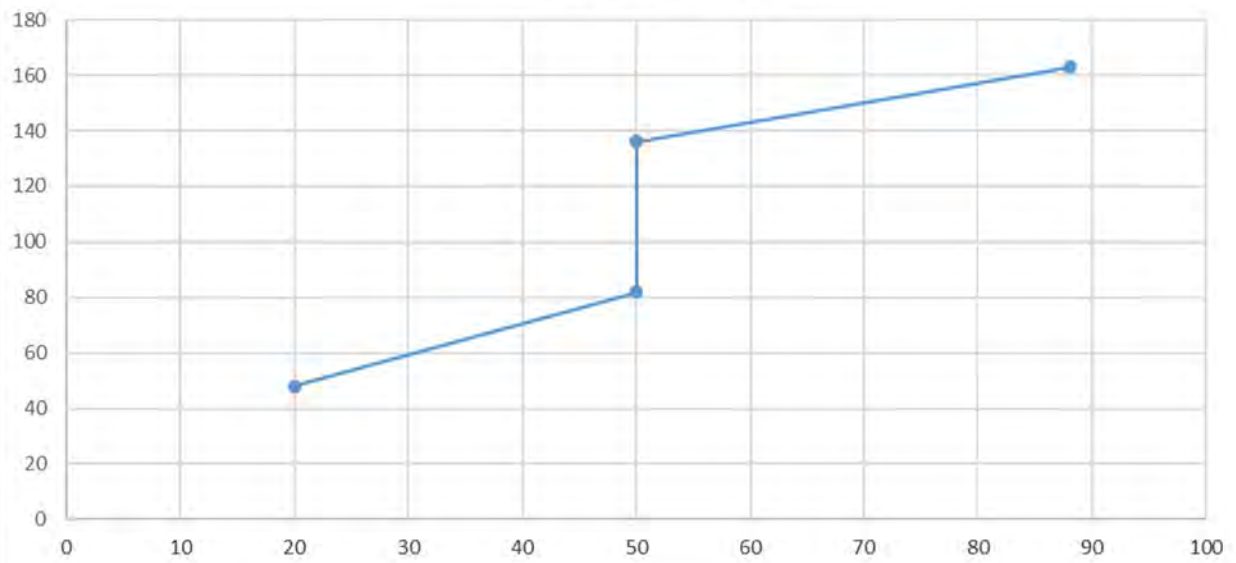
SVE PILOT TEST GRAPHS

J17E

9/17/21



Wellhead Vacuum (IWC) versus Flow (CFM)
SVE Pilot Test - J17E



AIR SPARGING PILOT TEST DATA FIELD MEASUREMENTS

Site: J17E
Personnel: Dustin Held

Date: 9/23/2021

Pilot Test Well: AS-01
Start Time: 1020

Flowrate (scfm)	Press. (psi)	Time	Time From Start	Well ID MW-09	Well ID MW-08	Well ID SB02-TB	Well ID SVE-01	Well ID	Well ID	Well ID
Distance from Sparge Well (ft):				40	30	20	20			
Pressure Measurement (IW)										
0- Static	0	1025	0.00	0.00	0.00	0.00	0			
2-3	25	1035	10.00	0.00	0.00	0.00	0.03			
6	25	1055	20.00	1.00	0.05	0.15	1.00			
	24	1115	20.00	1.50	0.05	0.00	1.30			
10	21	1125	10.00	5.00	0.25	0.50	1.30			
12	21	1140	15.00	8.20	10.00	0.20	2.70			
	21	1200	20.00	7.00	4.40	0.00	3.10			
0	0	1225	25.00		0.00	0.04	0.90			
0										
Maximum Change:										
VOC Measurement (ppm)										
0- Static	0	1025	0.00	0.40	2.20	0.30	0.40			
2-3	25	1035	10.00	0.01	0.30	0.20	67.50			
6	25	1055	20.00	0.00	100.00	0.20	670.50			
	24	1115	20.00	2.00	295.00	0.40	683.00			
10	21	1125	10.00	1.50	410.00	11.00	465.00			
12	21	1140	15.00	2.00	371.00	6.00	448.00			
	21	1200	20.00	1.00	136.00	0.00	668.00			
0	0	1225	25.00	1.00	34.00	1.00	370.00			
0										
Maximum Change:										
Depth to Water (ft)										
0- Static	0	1025	0.00	55.78	53.54	54.96	NA			
2-3	25	1035	10.00	52.35	50.80	50.82	NA			
6	25	1055	20.00	52.06	50.06	50.59	NA			
	24	1115	20.00	52.19	50.11	50.66	NA			
10	21	1125	10.00	57.1	49.50	49.93	NA			
12	21	1140	15.00	49.97	48.52	49.22	NA			
	21	1200	20.00	50.21	48.50	49.30	NA			
0	0	1225	25.00	52.73	50.81	50.79	NA			
0										
Maximum Change:										

Notes:

cfm = cubic feet per minute
ft = feet

NM = Not Measured
ppm = parts per million

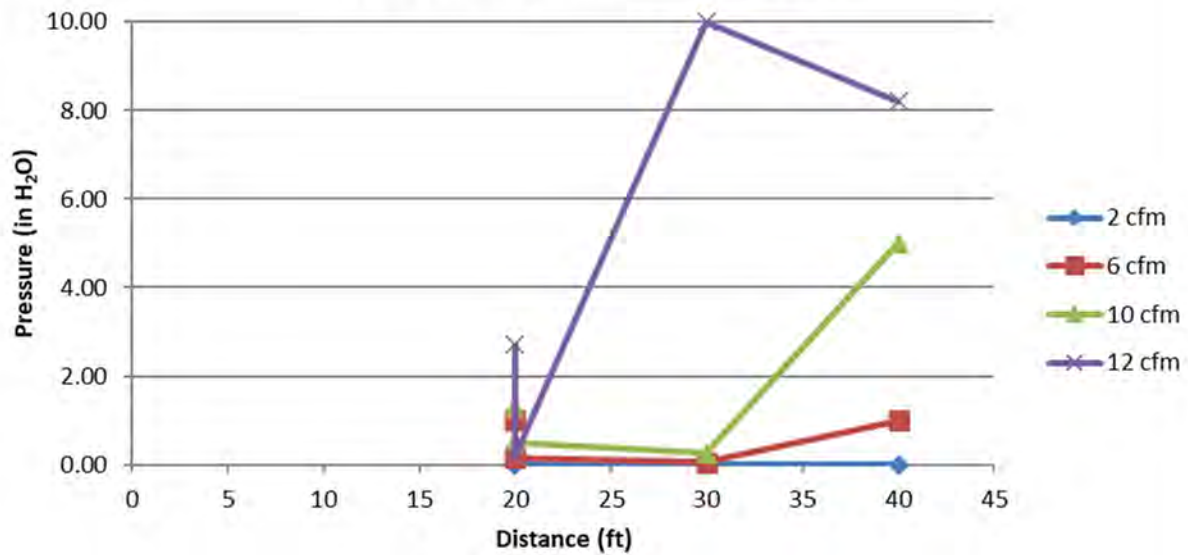
min = minutes
psi = pounds per square inch

AS PILOT TEST GRAPHS

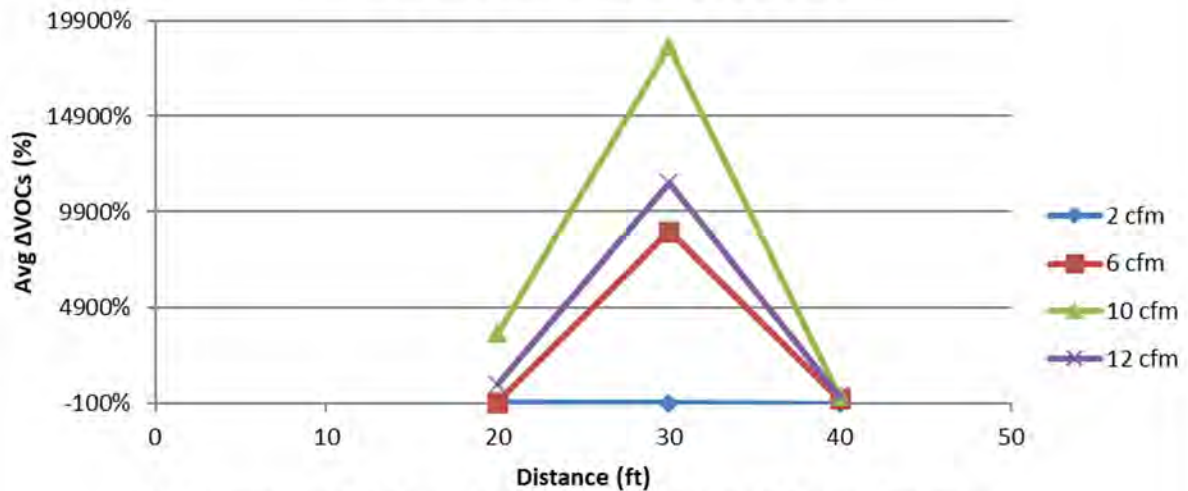
J17E

9/23/21

AS Test Pressure Response

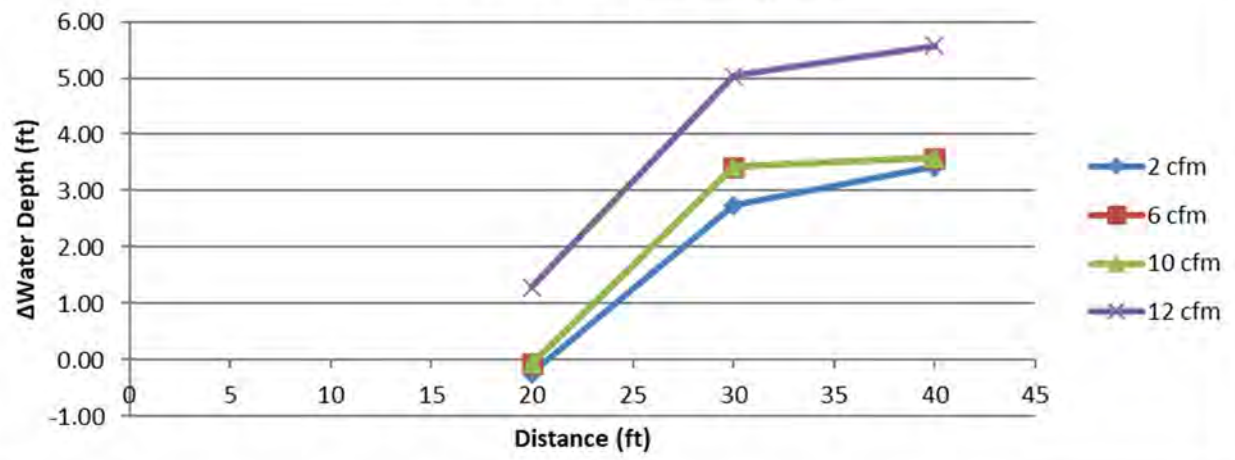


AS Test Average % ΔVOCs



SVE01 not included due to high increase in VOCs +100,000%. Graph to represent volatilization from groundwater.

AS Test Δ Water Depth



AIR SPARGING PILOT TEST DATA

FIELD MEASUREMENTS

COMBINED

Site: J17E
 Personnel: Dustin Held

Date: 9/23/2021

Pilot Test Well: AS-01/SVE-01
 Start Time: 1235

Flowrate (scfm)	Press. (psi)	Time	Time From Start	Well ID MW-09	Well ID MW-08	Well ID SB02-TB	Well ID	Well ID	Well ID	Well ID
Distance from Sparge Well (ft):										
				Pressure Measurement (IW)						
0- Static										
10	23	1245	10	5.80	0.45	0.15				
	21	1255	20	6.00	3.50	0.29				
	21	1305	30	5.20	3.50	2.00				
0	0	1325	45	0.00	0.00	0.00				
8										
8										
8										
8										
0										
Maximum Change:				5.80	3.05	1.71	0.00			
				VOC Measurement (ppm)						
0- Static										
10	23	1245	10	1.00	7.00	1.00				
	21	1255	20	1.00	8.00	8.00				
	21	1305	30	1.00	13.00	11.00				
0	0	1325	45	1.30	11.00	0.70				
8										
8										
8										
8										
0										
Maximum Change:				1.0	7.0	7.0	0.0			
				Depth to Water (ft)						
0- Static										
10	23	1245	10	51.49	49.64	50.71				
	21	1255	20	50.90	48.86	50.22				
	21	1305	30	50.04	48.71	50.05				
0	0	1325	45	52.58	50.42	51.18				
8										
8										
8										
8										
0										
Maximum Change:				52.58	50.42		0.00			
				Dissolved Oxygen (DO) (mg/L)						
0- Static										
2										
5										
8										
Maximum Change:				0.00	0.00					

Notes:

cfm = cubic feet per minute
 ft = feet

NM = Not Measured
 ppm = parts per million

min = minutes
 psi = pounds per square inch

ENCLOSURE C – LABORATORY ANALYTICAL RESULTS

September 02, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1395536
Samples Received: 08/26/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Jake Janicek
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

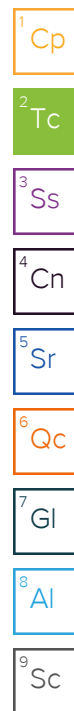
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

Pace Analytical National

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

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SAMPLE SUMMARY

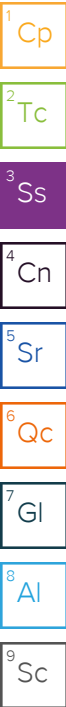
20210823-J17E(MW03)@15-17' L1395536-01 Solid

Collected by
Parker Coit

Collected date/time
08/23/21 12:13

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:18	09/01/21 22:18	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 19:37	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1732621	1	08/31/21 15:00	08/31/21 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:42	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 20:05	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 20:45	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 02:42	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	1	09/01/21 19:25	09/02/21 13:32	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 11:41	AAT	Mt. Juliet, TN



20210823-J17E(MW03)@35-37' L1395536-02 Solid

Collected by
Parker Coit

Collected date/time
08/23/21 15:43

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:21	09/01/21 22:21	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 19:42	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1732621	1	08/31/21 15:00	08/31/21 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:09	09/01/21 23:45	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 20:08	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 21:08	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 03:01	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	5	09/01/21 19:25	09/02/21 11:26	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 11:59	AAT	Mt. Juliet, TN

20210823-J17E(MW03)@40-42' L1395536-03 Solid

Collected by
Parker Coit

Collected date/time
08/23/21 15:53

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:29	09/01/21 22:29	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 19:47	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1732621	1	08/31/21 15:00	08/31/21 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:48	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 20:11	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 21:32	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 03:19	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	1	09/01/21 19:25	09/02/21 09:49	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 12:17	AAT	Mt. Juliet, TN

20210823-J17E(MW03)@50-52' L1395536-04 Solid

Collected by
Parker Coit

Collected date/time
08/23/21 16:30

Received date/time
08/26/21 09:30

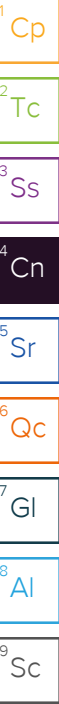
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:32	09/01/21 22:32	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 19:52	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1732621	1	08/31/21 15:00	08/31/21 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:51	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 20:15	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 21:56	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 03:38	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	1	09/01/21 19:25	09/02/21 13:18	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 12:35	AAT	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.922		1	09/01/2021 22:18	WG1730650

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	08/30/2021 19:37	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.80	T8	1	08/31/2021 18:00	WG1732621

Sample Narrative:

L1395536-01 WG1732621: 8.8 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	312		0.0852	0.500	1	09/01/2021 23:42	WG1730524
Cadmium	0.426	J	0.0471	0.500	1	09/01/2021 23:42	WG1730524
Nickel	20.5		0.132	2.00	1	09/01/2021 23:42	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:42	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	16.9		0.100	1.00	5	08/28/2021 20:05	WG1730526

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

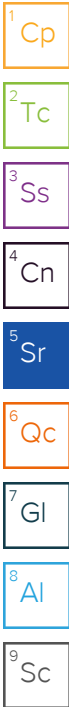
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0558	J	0.0217	0.100	1	08/29/2021 20:45	WG1731195
(S) a,a,a-Trifluorotoluene(FID)	95.7			77.0-120		08/29/2021 20:45	WG1731195

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	08/29/2021 02:42	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 02:42	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 02:42	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 02:42	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 02:42	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 02:42	WG1731257
(S) Toluene-d8	115			75.0-131		08/29/2021 02:42	WG1731257
(S) 4-Bromofluorobenzene	84.6			67.0-138		08/29/2021 02:42	WG1731257
(S) 1,2-Dichloroethane-d4	96.3			70.0-130		08/29/2021 02:42	WG1731257

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	18.0		1.61	4.00	1	09/02/2021 13:32	WG1732522
C28-C36 Motor Oil Range	94.5		0.274	4.00	1	09/02/2021 13:32	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	36.0			18.0-148		09/02/2021 13:32	WG1732522

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
Fluorene	ND		0.00205	0.00600	1	09/01/2021 11:41	WG1732509
Naphthalene	ND		0.00408	0.0200	1	09/01/2021 11:41	WG1732509
1-Methylnaphthalene	ND		0.00449	0.0200	1	09/01/2021 11:41	WG1732509
2-Methylnaphthalene	ND		0.00427	0.0200	1	09/01/2021 11:41	WG1732509
(S) p-Terphenyl-d14	113			23.0-120		09/01/2021 11:41	WG1732509
(S) Nitrobenzene-d5	84.2			14.0-149		09/01/2021 11:41	WG1732509
(S) 2-Fluorobiphenyl	92.2			34.0-125		09/01/2021 11:41	WG1732509

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.962		1	09/01/2021 22:21	WG1730650

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	08/30/2021 19:42	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.75	T8	1	08/31/2021 18:00	WG1732621

Sample Narrative:

L1395536-02 WG1732621: 8.75 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	199		0.0852	0.500	1	09/01/2021 23:45	WG1730524
Cadmium	0.453	J	0.0471	0.500	1	09/01/2021 23:45	WG1730524
Nickel	15.7		0.132	2.00	1	09/01/2021 23:45	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:45	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.9		0.100	1.00	5	08/28/2021 20:08	WG1730526

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

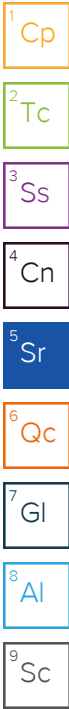
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	08/29/2021 21:08	WG1731195
(S) a,a,a-Trifluorotoluene(FID)	94.7			77.0-120		08/29/2021 21:08	WG1731195

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	08/29/2021 03:01	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 03:01	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 03:01	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 03:01	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 03:01	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 03:01	WG1731257
(S) Toluene-d8	114			75.0-131		08/29/2021 03:01	WG1731257
(S) 4-Bromofluorobenzene	84.3			67.0-138		08/29/2021 03:01	WG1731257
(S) 1,2-Dichloroethane-d4	96.5			70.0-130		08/29/2021 03:01	WG1731257

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	35.2		8.05	20.0	5	09/02/2021 11:26	WG1732522
C28-C36 Motor Oil Range	180		1.37	20.0	5	09/02/2021 11:26	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	40.8			18.0-148		09/02/2021 11:26	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 11:59	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 11:59	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 11:59	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 11:59	WG1732509
(S) p-Terphenyl-d14	111			23.0-120		09/01/2021 11:59	WG1732509
(S) Nitrobenzene-d5	81.6			14.0-149		09/01/2021 11:59	WG1732509
(S) 2-Fluorobiphenyl	93.8			34.0-125		09/01/2021 11:59	WG1732509

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.01		1	09/01/2021 22:29	WG1730650

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	08/30/2021 19:47	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.50	T8	1	08/31/2021 18:00	WG1732621

Sample Narrative:

L1395536-03 WG1732621: 8.5 at 22C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	213		0.0852	0.500	1	09/01/2021 23:48	WG1730524
Cadmium	0.431	J	0.0471	0.500	1	09/01/2021 23:48	WG1730524
Nickel	24.4		0.132	2.00	1	09/01/2021 23:48	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:48	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	14.8		0.100	1.00	5	08/28/2021 20:11	WG1730526

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	0.0363	J	0.0217	0.100	1	08/29/2021 21:32	WG1731195
(S) a,a,a-Trifluorotoluene(FID)	93.7			77.0-120		08/29/2021 21:32	WG1731195

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	08/29/2021 03:19	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 03:19	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 03:19	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 03:19	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 03:19	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 03:19	WG1731257
(S) Toluene-d8	111			75.0-131		08/29/2021 03:19	WG1731257
(S) 4-Bromofluorobenzene	88.2			67.0-138		08/29/2021 03:19	WG1731257
(S) 1,2-Dichloroethane-d4	104			70.0-130		08/29/2021 03:19	WG1731257

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	20.9		1.61	4.00	1	09/02/2021 09:49	WG1732522
C28-C36 Motor Oil Range	105		0.274	4.00	1	09/02/2021 09:49	WG1732522

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	38.8			18.0-148		09/02/2021 09:49	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 12:17	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 12:17	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 12:17	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 12:17	WG1732509
(S) p-Terphenyl-d14	97.1			23.0-120		09/01/2021 12:17	WG1732509
(S) Nitrobenzene-d5	75.2			14.0-149		09/01/2021 12:17	WG1732509
(S) 2-Fluorobiphenyl	83.1			34.0-125		09/01/2021 12:17	WG1732509

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Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.06		1	09/01/2021 22:32	WG1730650

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	08/30/2021 19:52	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.50	T8	1	08/31/2021 18:00	WG1732621

Sample Narrative:

L1395536-04 WG1732621: 8.5 at 21.9C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	323		0.0852	0.500	1	09/01/2021 23:51	WG1730524
Cadmium	0.297	J	0.0471	0.500	1	09/01/2021 23:51	WG1730524
Nickel	22.7		0.132	2.00	1	09/01/2021 23:51	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:51	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.83		0.100	1.00	5	08/28/2021 20:15	WG1730526

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

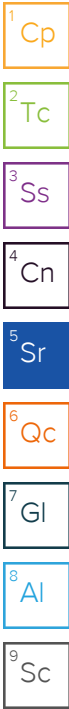
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	08/29/2021 21:56	WG1731195
(S) a,a,a-Trifluorotoluene(FID)	94.8			77.0-120		08/29/2021 21:56	WG1731195

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	08/29/2021 03:38	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 03:38	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 03:38	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 03:38	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 03:38	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 03:38	WG1731257
(S) Toluene-d8	112			75.0-131		08/29/2021 03:38	WG1731257
(S) 4-Bromofluorobenzene	84.0			67.0-138		08/29/2021 03:38	WG1731257
(S) 1,2-Dichloroethane-d4	96.1			70.0-130		08/29/2021 03:38	WG1731257

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	13.4		1.61	4.00	1	09/02/2021 13:18	WG1732522
C28-C36 Motor Oil Range	59.4		0.274	4.00	1	09/02/2021 13:18	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	22.5			18.0-148		09/02/2021 13:18	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 12:35	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 12:35	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 12:35	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 12:35	WG1732509
(S) p-Terphenyl-d14	116			23.0-120		09/01/2021 12:35	WG1732509
(S) Nitrobenzene-d5	87.1			14.0-149		09/01/2021 12:35	WG1732509
(S) 2-Fluorobiphenyl	96.2			34.0-125		09/01/2021 12:35	WG1732509

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Cp

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Ss

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Cn

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Al

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Sc

Method Blank (MB)

(MB) R3698206-1 08/30/21 15:17

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

L1394641-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1394641-09 08/30/21 15:38 • (DUP) R3698206-3 08/30/21 15:43

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

L1395535-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1395535-06 08/30/21 18:50 • (DUP) R3698206-4 08/30/21 18:55

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

Laboratory Control Sample (LCS)

(LCS) R3698206-2 08/30/21 15:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.47	94.7	80.0-120	

L1395535-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395535-06 08/30/21 18:50 • (MS) R3698206-5 08/30/21 19:00 • (MSD) R3698206-6 08/30/21 19:06

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	19.6	18.3	98.1	91.3	1	75.0-125			7.13	20

L1395535-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1395535-06 08/30/21 18:50 • (MS) R3698206-7 08/30/21 19:11

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	647	U	641	99.1	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3698706-1 08/31/21 18:00

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

Sample Narrative:

LCS: 10.04 at 22.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3699461-1 09/01/21 22:54

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3699461-2 09/01/21 22:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	99.7	99.7	80.0-120	
Cadmium	100	96.3	96.3	80.0-120	
Nickel	100	99.6	99.6	80.0-120	
Selenium	100	96.7	96.7	80.0-120	

L1395535-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395535-01 09/01/21 23:00 • (MS) R3699461-5 09/01/21 23:10 • (MSD) R3699461-6 09/01/21 23:13

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	193	355	389	162	196	1	75.0-125	J5	J5	9.16	20
Cadmium	100	0.449	103	95.9	103	95.5	1	75.0-125			7.24	20
Nickel	100	16.6	128	119	111	103	1	75.0-125			6.55	20
Selenium	100	U	104	95.5	104	95.5	1	75.0-125			8.19	20

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Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3697821-1 08/28/21 19:15

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) R3697821-2 08/28/21 19:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	84.1	84.1	80.0-120	

L1395535-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395535-01 08/28/21 19:22 • (MS) R3697821-5 08/28/21 19:32 • (MSD) R3697821-6 08/28/21 19:35

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 %
Arsenic	100	8.00	96.7	94.8	88.7	86.8	5	75.0-125			2.01	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699554-2 08/29/21 13:39

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)	98.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3699554-1 08/29/21 12:52

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)			105	77.0-120	

L1395520-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395520-04 08/29/21 14:26 • (MS) R3699554-3 08/29/21 22:19 • (MSD) R3699554-4 08/29/21 22:43

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.45	0.149	1.51	1.92	25.0	32.5	1	10.0-151			23.9	28
(S) a,a,a-Trifluorotoluene(FID)					95.9	97.2		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3697895-3 08/28/21 21:58

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	108			75.0-131
(S) 4-Bromofluorobenzene	89.3			67.0-138
(S) 1,2-Dichloroethane-d4	105			70.0-130

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

(LCS) R3697895-1 08/28/21 20:43 • (LCSD) R3697895-2 08/28/21 21:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.121	0.121	96.8	96.8	70.0-123			0.000	20
Ethylbenzene	0.125	0.120	0.118	96.0	94.4	74.0-126			1.68	20
Toluene	0.125	0.128	0.127	102	102	75.0-121			0.784	20
1,2,4-Trimethylbenzene	0.125	0.110	0.115	88.0	92.0	70.0-126			4.44	20
1,3,5-Trimethylbenzene	0.125	0.116	0.122	92.8	97.6	73.0-127			5.04	20
Xylenes, Total	0.375	0.336	0.335	89.6	89.3	72.0-127			0.298	20
(S) Toluene-d8				105	105	75.0-131				
(S) 4-Bromofluorobenzene				93.9	93.2	67.0-138				
(S) 1,2-Dichloroethane-d4				101	103	70.0-130				

L1393962-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1393962-06 08/28/21 22:17 • (MS) R3697895-4 08/29/21 03:57 • (MSD) R3697895-5 08/29/21 04:16

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	0.108	U	0.0908	0.0698	94.1	72.3	1	10.0-149			26.2	37
Ethylbenzene	0.108	U	0.0871	0.0686	90.3	71.1	1	10.0-160			23.8	38
Toluene	0.108	U	0.0991	0.0787	103	81.6	1	10.0-156			22.9	38
1,2,4-Trimethylbenzene	0.108	U	0.0828	0.0698	85.8	72.3	1	10.0-160			17.0	36
1,3,5-Trimethylbenzene	0.108	U	0.0885	0.0729	91.7	75.5	1	10.0-160			19.3	38
Xylenes, Total	0.324	U	0.242	0.194	83.7	67.1	1	10.0-160			22.0	38
(S) Toluene-d8					107	109		75.0-131				
(S) 4-Bromofluorobenzene					87.9	88.7		67.0-138				
(S) 1,2-Dichloroethane-d4					91.3	97.8		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699525-1 09/02/21 06:10

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	49.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3699525-2 09/02/21 06:23

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.4	64.8	50.0-150	
(S) o-Terphenyl			46.5	18.0-148	

L1395577-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395577-01 09/02/21 07:04 • (MS) R3699525-3 09/02/21 07:18 • (MSD) R3699525-4 09/02/21 07:31

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	48.2	U	31.9	30.5	66.2	63.8	1	50.0-150			4.49	20
(S) o-Terphenyl					42.2	40.4		18.0-148				

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Cp

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Tc

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Ss

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Sc

Method Blank (MB)

(MB) R3699100-2 09/01/21 07:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	79.1			14.0-149
(S) 2-Fluorobiphenyl	92.3			34.0-125
(S) p-Terphenyl-d14	118			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3699100-1 09/01/21 06:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0790	98.8	49.0-120	
Naphthalene	0.0800	0.0740	92.5	50.0-120	
1-Methylnaphthalene	0.0800	0.0791	98.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0750	93.8	50.0-120	
(S) Nitrobenzene-d5			90.4	14.0-149	
(S) 2-Fluorobiphenyl			98.4	34.0-125	
(S) p-Terphenyl-d14			120	23.0-120	

L1395716-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395716-01 09/01/21 12:53 • (MS) R3699100-3 09/01/21 13:11 • (MSD) R3699100-4 09/01/21 13:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0784	U	0.0730	0.0723	93.1	91.8	1	11.0-130			0.964	29
Naphthalene	0.0784	U	0.0693	0.0717	88.4	91.0	1	10.0-135			3.40	27
1-Methylnaphthalene	0.0784	U	0.0738	0.0764	94.1	97.0	1	10.0-142			3.46	28
2-Methylnaphthalene	0.0784	U	0.0697	0.0721	88.9	91.5	1	10.0-137			3.39	28
(S) Nitrobenzene-d5					80.9	88.7		14.0-149				
(S) 2-Fluorobiphenyl					90.8	97.3		34.0-125				
(S) p-Terphenyl-d14					114	116		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

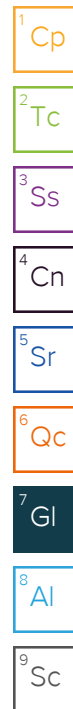
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122





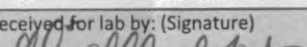
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia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

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

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

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



Tracking # 5016 1232 3466	
Received by: (Signature) 	Trip Blank Received: Yes / No  HCL / MeOH TBR
Received by: (Signature)	Temp: °C  Bottles Received: 
Received for lab by: (Signature) 	Date: 8/26/21 Time: 0930

September 07, 2021

Caerus Oil and Gas

Sample Delivery Group: L1395535
Samples Received: 08/26/2021
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

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

Pace Analytical National

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

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SAMPLE SUMMARY

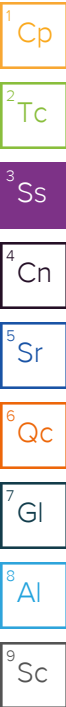
20210824-J17E(MW03)@60-62' L1395535-01 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 08:26

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 21:59	09/01/21 21:59	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 18:14	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1730623	1	09/01/21 09:00	09/01/21 12:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 19:22	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 18:00	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 00:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1733105	1	08/31/21 21:17	09/01/21 18:54	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 09:36	AAT	Mt. Juliet, TN



20210824-J17E(MW07)@15-17' L1395535-02 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 11:26

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:02	09/01/21 22:02	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 18:29	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1730623	1	09/01/21 09:00	09/01/21 12:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:16	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 19:38	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 18:24	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 00:48	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	1	09/01/21 19:25	09/02/21 09:07	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 09:54	AAT	Mt. Juliet, TN

20210824-J17E(MW07)@25-27' L1395535-03 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 11:50

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:05	09/01/21 22:05	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 18:34	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1730623	1	09/01/21 09:00	09/01/21 12:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:20	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 19:41	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 18:47	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 01:07	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	5	09/01/21 19:25	09/02/21 10:44	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 10:12	AAT	Mt. Juliet, TN

20210824-J17E(MW07)@35-37' L1395535-04 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 12:54

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:07	09/01/21 22:07	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 18:40	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1730623	1	09/01/21 09:00	09/01/21 12:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:23	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 19:45	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 19:11	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 01:26	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	5	09/01/21 19:25	09/02/21 10:58	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 10:30	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

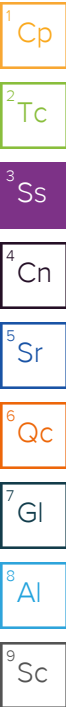
20210824-J17E(MW07)@45-47' L1395535-05 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 13:26

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:10	09/01/21 22:10	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 18:45	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1730623	1	09/01/21 09:00	09/01/21 12:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:32	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 19:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 19:34	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 01:45	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	5	09/01/21 19:25	09/02/21 11:12	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 10:48	AAT	Mt. Juliet, TN



20210824-J17E(MW07)@55-57' L1395535-06 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 14:05

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:13	09/01/21 22:13	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 18:50	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1730623	1	09/01/21 09:00	09/01/21 12:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:35	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 19:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 19:58	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 02:04	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1732522	1	09/01/21 19:25	09/02/21 06:37	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 11:06	AAT	Mt. Juliet, TN

20210824-J17E(MW07)@60-62' L1395535-07 Solid

Collected by
Parker Coit

Collected date/time
08/24/21 14:56

Received date/time
08/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1730650	1	09/01/21 22:16	09/01/21 22:16	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1730923	1	08/29/21 12:12	08/30/21 19:32	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1732621	1	08/31/21 15:00	08/31/21 18:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1730524	1	08/27/21 16:08	09/01/21 23:38	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1730526	5	08/27/21 16:32	08/28/21 20:01	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1731195	1	08/27/21 18:48	08/29/21 20:21	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1731257	1	08/27/21 18:48	08/29/21 02:23	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1734340	1	09/03/21 09:45	09/04/21 05:05	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1732509	1	08/31/21 19:26	09/01/21 11:24	AAT	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.57		1	09/01/2021 21:59	WG1730650

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	08/30/2021 18:14	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.60	T8	1	09/01/2021 12:00	WG1730623

Sample Narrative:

L1395535-01 WG1730623: 8.6 at 21.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	193	J5	0.0852	0.500	1	09/01/2021 23:00	WG1730524
Cadmium	0.449	J	0.0471	0.500	1	09/01/2021 23:00	WG1730524
Nickel	16.6		0.132	2.00	1	09/01/2021 23:00	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:00	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.00	Q1	0.100	1.00	5	08/28/2021 19:22	WG1730526

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0466	J	0.0217	0.100	1	08/29/2021 18:00	WG1731195
(S) a,a,a-Trifluorotoluene(FID)	95.0			77.0-120		08/29/2021 18:00	WG1731195

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	08/29/2021 00:29	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 00:29	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 00:29	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 00:29	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 00:29	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 00:29	WG1731257
(S) Toluene-d8	109			75.0-131		08/29/2021 00:29	WG1731257
(S) 4-Bromofluorobenzene	88.8			67.0-138		08/29/2021 00:29	WG1731257
(S) 1,2-Dichloroethane-d4	98.4			70.0-130		08/29/2021 00:29	WG1731257

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	24.7		1.61	4.00	1	09/01/2021 18:54	WG1733105
C28-C36 Motor Oil Range	92.5		0.274	4.00	1	09/01/2021 18:54	WG1733105

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	64.3			18.0-148		09/01/2021 18:54	WG1733105

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 09:36	WG1732509
Naphthalene	0.00454	J	0.00408	0.0200	1	09/01/2021 09:36	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 09:36	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 09:36	WG1732509
(S) p-Terphenyl-d14	86.3			23.0-120		09/01/2021 09:36	WG1732509
(S) Nitrobenzene-d5	57.2			14.0-149		09/01/2021 09:36	WG1732509
(S) 2-Fluorobiphenyl	71.1			34.0-125		09/01/2021 09:36	WG1732509

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.906		1	09/01/2021 22:02	WG1730650

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	08/30/2021 18:29	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.34	T8	1	09/01/2021 12:00	WG1730623

Sample Narrative:

L1395535-02 WG1730623: 8.34 at 21.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	274		0.0852	0.500	1	09/01/2021 23:16	WG1730524
Cadmium	0.374	J	0.0471	0.500	1	09/01/2021 23:16	WG1730524
Nickel	16.5		0.132	2.00	1	09/01/2021 23:16	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:16	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	17.7		0.100	1.00	5	08/28/2021 19:38	WG1730526

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

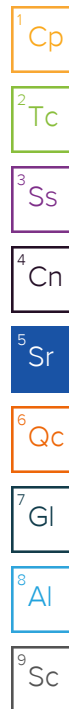
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.106		0.0217	0.100	1	08/29/2021 18:24	WG1731195
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.3			77.0-120		08/29/2021 18:24	WG1731195

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	08/29/2021 00:48	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 00:48	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 00:48	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 00:48	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 00:48	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 00:48	WG1731257
(S) Toluene-d8	112			75.0-131		08/29/2021 00:48	WG1731257
(S) 4-Bromofluorobenzene	85.4			67.0-138		08/29/2021 00:48	WG1731257
(S) 1,2-Dichloroethane-d4	95.2			70.0-130		08/29/2021 00:48	WG1731257

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	7.44		1.61	4.00	1	09/02/2021 09:07	WG1732522
C28-C36 Motor Oil Range	26.4		0.274	4.00	1	09/02/2021 09:07	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	46.7			18.0-148		09/02/2021 09:07	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 09:54	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 09:54	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 09:54	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 09:54	WG1732509
(S) p-Terphenyl-d14	92.9			23.0-120		09/01/2021 09:54	WG1732509
(S) Nitrobenzene-d5	68.9			14.0-149		09/01/2021 09:54	WG1732509
(S) 2-Fluorobiphenyl	77.8			34.0-125		09/01/2021 09:54	WG1732509

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.01		1	09/01/2021 22:05	WG1730650

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	08/30/2021 18:34	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.56	T8	1	09/01/2021 12:00	WG1730623

Sample Narrative:

L1395535-03 WG1730623: 8.56 at 21.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	264		0.0852	0.500	1	09/01/2021 23:20	WG1730524
Cadmium	0.472	J	0.0471	0.500	1	09/01/2021 23:20	WG1730524
Nickel	24.4		0.132	2.00	1	09/01/2021 23:20	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:20	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	20.2		0.100	1.00	5	08/28/2021 19:41	WG1730526

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

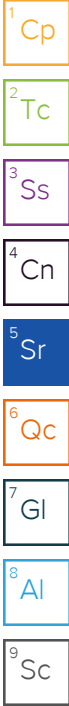
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0851	J	0.0217	0.100	1	08/29/2021 18:47	WG1731195
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.8			77.0-120		08/29/2021 18:47	WG1731195

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	08/29/2021 01:07	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 01:07	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 01:07	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 01:07	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 01:07	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 01:07	WG1731257
(S) <i>Toluene-d8</i>	111			75.0-131		08/29/2021 01:07	WG1731257
(S) <i>4</i> -Bromofluorobenzene	87.7			67.0-138		08/29/2021 01:07	WG1731257
(S) <i>1,2</i> -Dichloroethane-d4	97.2			70.0-130		08/29/2021 01:07	WG1731257

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	23.3		8.05	20.0	5	09/02/2021 10:44	WG1732522
C28-C36 Motor Oil Range	139		1.37	20.0	5	09/02/2021 10:44	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	37.5			18.0-148		09/02/2021 10:44	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 10:12	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 10:12	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 10:12	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 10:12	WG1732509
(S) p-Terphenyl-d14	112			23.0-120		09/01/2021 10:12	WG1732509
(S) Nitrobenzene-d5	85.8			14.0-149		09/01/2021 10:12	WG1732509
(S) 2-Fluorobiphenyl	93.3			34.0-125		09/01/2021 10:12	WG1732509

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.04		1	09/01/2021 22:07	WG1730650

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	08/30/2021 18:40	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.63	T8	1	09/01/2021 12:00	WG1730623

Sample Narrative:

L1395535-04 WG1730623: 8.63 at 21.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	306		0.0852	0.500	1	09/01/2021 23:23	WG1730524
Cadmium	0.380	J	0.0471	0.500	1	09/01/2021 23:23	WG1730524
Nickel	16.8		0.132	2.00	1	09/01/2021 23:23	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:23	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.1		0.100	1.00	5	08/28/2021 19:45	WG1730526

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

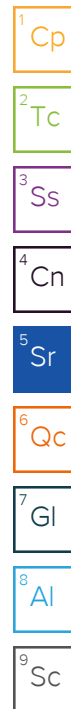
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0926	J	0.0217	0.100	1	08/29/2021 19:11	WG1731195
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.8			77.0-120		08/29/2021 19:11	WG1731195

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	08/29/2021 01:26	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 01:26	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 01:26	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 01:26	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 01:26	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 01:26	WG1731257
(S) Toluene-d8	110			75.0-131		08/29/2021 01:26	WG1731257
(S) 4-Bromofluorobenzene	87.3			67.0-138		08/29/2021 01:26	WG1731257
(S) 1,2-Dichloroethane-d4	98.2			70.0-130		08/29/2021 01:26	WG1731257

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	35.5		8.05	20.0	5	09/02/2021 10:58	WG1732522
C28-C36 Motor Oil Range	177		1.37	20.0	5	09/02/2021 10:58	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	44.3			18.0-148		09/02/2021 10:58	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 10:30	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 10:30	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 10:30	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 10:30	WG1732509
(S) p-Terphenyl-d14	113			23.0-120		09/01/2021 10:30	WG1732509
(S) Nitrobenzene-d5	82.0			14.0-149		09/01/2021 10:30	WG1732509
(S) 2-Fluorobiphenyl	91.8			34.0-125		09/01/2021 10:30	WG1732509

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.13		1	09/01/2021 22:10	WG1730650

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	08/30/2021 18:45	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.20	T8	1	09/01/2021 12:00	WG1730623

Sample Narrative:

L1395535-05 WG1730623: 8.2 at 21.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	272		0.0852	0.500	1	09/01/2021 23:32	WG1730524
Cadmium	0.297	J	0.0471	0.500	1	09/01/2021 23:32	WG1730524
Nickel	18.1		0.132	2.00	1	09/01/2021 23:32	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:32	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.0		0.100	1.00	5	08/28/2021 19:55	WG1730526

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

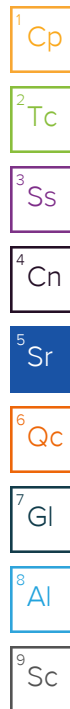
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.302		0.0217	0.100	1	08/29/2021 19:34	WG1731195
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	87.5			77.0-120		08/29/2021 19:34	WG1731195

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	0.00165		0.000467	0.00100	1	08/29/2021 01:45	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 01:45	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 01:45	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 01:45	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 01:45	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 01:45	WG1731257
(S) Toluene-d8	110			75.0-131		08/29/2021 01:45	WG1731257
(S) 4-Bromofluorobenzene	87.1			67.0-138		08/29/2021 01:45	WG1731257
(S) 1,2-Dichloroethane-d4	99.2			70.0-130		08/29/2021 01:45	WG1731257

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	32.9		8.05	20.0	5	09/02/2021 11:12	WG1732522
C28-C36 Motor Oil Range	161		1.37	20.0	5	09/02/2021 11:12	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	40.7			18.0-148		09/02/2021 11:12	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 10:48	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 10:48	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 10:48	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 10:48	WG1732509
(S) p-Terphenyl-d14	111			23.0-120		09/01/2021 10:48	WG1732509
(S) Nitrobenzene-d5	84.0			14.0-149		09/01/2021 10:48	WG1732509
(S) 2-Fluorobiphenyl	91.4			34.0-125		09/01/2021 10:48	WG1732509

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.28		1	09/01/2021 22:13	WG1730650

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	08/30/2021 18:50	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.42	T8	1	09/01/2021 12:00	WG1730623

Sample Narrative:

L1395535-06 WG1730623: 8.42 at 21.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	143		0.0852	0.500	1	09/01/2021 23:35	WG1730524
Cadmium	0.371	J	0.0471	0.500	1	09/01/2021 23:35	WG1730524
Nickel	20.6		0.132	2.00	1	09/01/2021 23:35	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:35	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.30		0.100	1.00	5	08/28/2021 19:58	WG1730526

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

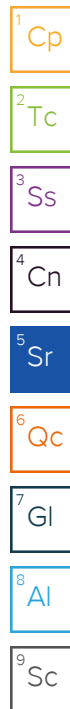
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0785	J	0.0217	0.100	1	08/29/2021 19:58	WG1731195
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.7			77.0-120		08/29/2021 19:58	WG1731195

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	08/29/2021 02:04	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 02:04	WG1731257
Toluene	U		0.00130	0.00500	1	08/29/2021 02:04	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 02:04	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 02:04	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 02:04	WG1731257
(S) Toluene-d8	110			75.0-131		08/29/2021 02:04	WG1731257
(S) 4-Bromofluorobenzene	88.4			67.0-138		08/29/2021 02:04	WG1731257
(S) 1,2-Dichloroethane-d4	99.9			70.0-130		08/29/2021 02:04	WG1731257

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/02/2021 06:37	WG1732522
C28-C36 Motor Oil Range	5.63		0.274	4.00	1	09/02/2021 06:37	WG1732522



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	33.6			18.0-148		09/02/2021 06:37	WG1732522

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 11:06	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 11:06	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 11:06	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 11:06	WG1732509
(S) p-Terphenyl-d14	69.8			23.0-120		09/01/2021 11:06	WG1732509
(S) Nitrobenzene-d5	54.9			14.0-149		09/01/2021 11:06	WG1732509
(S) 2-Fluorobiphenyl	60.3			34.0-125		09/01/2021 11:06	WG1732509

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.86		1	09/01/2021 22:16	WG1730650

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	08/30/2021 19:32	WG1730923

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.68	T8	1	08/31/2021 18:00	WG1732621

Sample Narrative:

L1395535-07 WG1732621: 8.68 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	236		0.0852	0.500	1	09/01/2021 23:38	WG1730524
Cadmium	0.347	J	0.0471	0.500	1	09/01/2021 23:38	WG1730524
Nickel	13.7		0.132	2.00	1	09/01/2021 23:38	WG1730524
Selenium	U		0.764	2.00	1	09/01/2021 23:38	WG1730524

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.39		0.100	1.00	5	08/28/2021 20:01	WG1730526

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

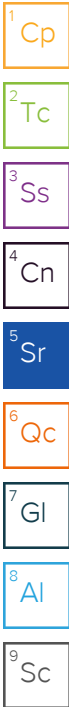
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.136		0.0217	0.100	1	08/29/2021 20:21	WG1731195
(S) a,a,a-Trifluorotoluene(FID)	92.0			77.0-120		08/29/2021 20:21	WG1731195

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	08/29/2021 02:23	WG1731257
Ethylbenzene	U		0.000737	0.00250	1	08/29/2021 02:23	WG1731257
Toluene	0.00163	J	0.00130	0.00500	1	08/29/2021 02:23	WG1731257
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/29/2021 02:23	WG1731257
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/29/2021 02:23	WG1731257
Xylenes, Total	U		0.000880	0.00650	1	08/29/2021 02:23	WG1731257
(S) Toluene-d8	108			75.0-131		08/29/2021 02:23	WG1731257
(S) 4-Bromofluorobenzene	90.5			67.0-138		08/29/2021 02:23	WG1731257
(S) 1,2-Dichloroethane-d4	104			70.0-130		08/29/2021 02:23	WG1731257

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	13.9		1.61	4.00	1	09/04/2021 05:05	WG1734340
C28-C36 Motor Oil Range	62.7		0.274	4.00	1	09/04/2021 05:05	WG1734340



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	36.4			18.0-148		09/04/2021 05:05	WG1734340

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
Fluorene	U		0.00205	0.00600	1	09/01/2021 11:24	WG1732509
Naphthalene	U		0.00408	0.0200	1	09/01/2021 11:24	WG1732509
1-Methylnaphthalene	U		0.00449	0.0200	1	09/01/2021 11:24	WG1732509
2-Methylnaphthalene	U		0.00427	0.0200	1	09/01/2021 11:24	WG1732509
(S) p-Terphenyl-d14	68.1			23.0-120		09/01/2021 11:24	WG1732509
(S) Nitrobenzene-d5	58.2			14.0-149		09/01/2021 11:24	WG1732509
(S) 2-Fluorobiphenyl	60.7			34.0-125		09/01/2021 11:24	WG1732509

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3698206-1 08/30/21 15:17

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

L1394641-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1394641-09 08/30/21 15:38 • (DUP) R3698206-3 08/30/21 15:43

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

L1395535-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1395535-06 08/30/21 18:50 • (DUP) R3698206-4 08/30/21 18:55

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

Laboratory Control Sample (LCS)

(LCS) R3698206-2 08/30/21 15:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.47	94.7	80.0-120	

L1395535-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395535-06 08/30/21 18:50 • (MS) R3698206-5 08/30/21 19:00 • (MSD) R3698206-6 08/30/21 19:06

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	19.6	18.3	98.1	91.3	1	75.0-125			7.13	20

L1395535-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1395535-06 08/30/21 18:50 • (MS) R3698206-7 08/30/21 19:11

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	647	U	641	99.1	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1395278-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395278-01 09/01/21 12:00 • (DUP) R3698981-2 09/01/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.45	7.50	1	0.669		1

Sample Narrative:

OS: 7.45 at 21.1C

DUP: 7.5 at 21.3C

L1395535-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1395535-04 09/01/21 12:00 • (DUP) R3698981-3 09/01/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.63	8.60	1	0.348		1

Sample Narrative:

OS: 8.63 at 21.1C

DUP: 8.6 at 21.1C

Laboratory Control Sample (LCS)

(LCS) R3698981-1 09/01/21 12:00

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

Sample Narrative:

LCS: 10.07 at 21.3C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3698706-1 08/31/21 18:00

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

Sample Narrative:

LCS: 10.04 at 22.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3699461-1 09/01/21 22:54

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3699461-2 09/01/21 22:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	99.7	99.7	80.0-120	
Cadmium	100	96.3	96.3	80.0-120	
Nickel	100	99.6	99.6	80.0-120	
Selenium	100	96.7	96.7	80.0-120	

L1395535-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395535-01 09/01/21 23:00 • (MS) R3699461-5 09/01/21 23:10 • (MSD) R3699461-6 09/01/21 23:13

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	193	355	389	162	196	1	75.0-125	J5	J5	9.16	20
Cadmium	100	0.449	103	95.9	103	95.5	1	75.0-125			7.24	20
Nickel	100	16.6	128	119	111	103	1	75.0-125			6.55	20
Selenium	100	U	104	95.5	104	95.5	1	75.0-125			8.19	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3697821-1 08/28/21 19:15

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) R3697821-2 08/28/21 19:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	84.1	84.1	80.0-120	

L1395535-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395535-01 08/28/21 19:22 • (MS) R3697821-5 08/28/21 19:32 • (MSD) R3697821-6 08/28/21 19:35

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 %
Arsenic	100	8.00	96.7	94.8	88.7	86.8	5	75.0-125			2.01	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699554-2 08/29/21 13:39

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)	98.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3699554-1 08/29/21 12:52

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)			105	77.0-120	

L1395520-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395520-04 08/29/21 14:26 • (MS) R3699554-3 08/29/21 22:19 • (MSD) R3699554-4 08/29/21 22:43

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.45	0.149	1.51	1.92	25.0	32.5	1	10.0-151			23.9	28
(S) a,a,a-Trifluorotoluene(FID)					95.9	97.2		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3697895-3 08/28/21 21:58

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	108			75.0-131
(S) 4-Bromofluorobenzene	89.3			67.0-138
(S) 1,2-Dichloroethane-d4	105			70.0-130

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

(LCS) R3697895-1 08/28/21 20:43 • (LCSD) R3697895-2 08/28/21 21:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.121	0.121	96.8	96.8	70.0-123			0.000	20
Ethylbenzene	0.125	0.120	0.118	96.0	94.4	74.0-126			1.68	20
Toluene	0.125	0.128	0.127	102	102	75.0-121			0.784	20
1,2,4-Trimethylbenzene	0.125	0.110	0.115	88.0	92.0	70.0-126			4.44	20
1,3,5-Trimethylbenzene	0.125	0.116	0.122	92.8	97.6	73.0-127			5.04	20
Xylenes, Total	0.375	0.336	0.335	89.6	89.3	72.0-127			0.298	20
(S) Toluene-d8				105	105	75.0-131				
(S) 4-Bromofluorobenzene				93.9	93.2	67.0-138				
(S) 1,2-Dichloroethane-d4				101	103	70.0-130				

L1393962-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1393962-06 08/28/21 22:17 • (MS) R3697895-4 08/29/21 03:57 • (MSD) R3697895-5 08/29/21 04:16

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	0.108	U	0.0908	0.0698	94.1	72.3	1	10.0-149			26.2	37
Ethylbenzene	0.108	U	0.0871	0.0686	90.3	71.1	1	10.0-160			23.8	38
Toluene	0.108	U	0.0991	0.0787	103	81.6	1	10.0-156			22.9	38
1,2,4-Trimethylbenzene	0.108	U	0.0828	0.0698	85.8	72.3	1	10.0-160			17.0	36
1,3,5-Trimethylbenzene	0.108	U	0.0885	0.0729	91.7	75.5	1	10.0-160			19.3	38
Xylenes, Total	0.324	U	0.242	0.194	83.7	67.1	1	10.0-160			22.0	38
(S) Toluene-d8					107	109		75.0-131				
(S) 4-Bromofluorobenzene					87.9	88.7		67.0-138				
(S) 1,2-Dichloroethane-d4					91.3	97.8		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699525-1 09/02/21 06:10

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	49.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3699525-2 09/02/21 06:23

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.4	64.8	50.0-150	
(S) o-Terphenyl			46.5	18.0-148	

L1395577-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395577-01 09/02/21 07:04 • (MS) R3699525-3 09/02/21 07:18 • (MSD) R3699525-4 09/02/21 07:31

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	48.2	U	31.9	30.5	66.2	63.8	1	50.0-150			4.49	20
(S) o-Terphenyl					42.2	40.4		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699214-1 09/01/21 11:56

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	73.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3699214-2 09/01/21 12:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	40.8	81.6	50.0-150	
(S) o-Terphenyl			76.6	18.0-148	

L1394939-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394939-02 09/01/21 12:23 • (MS) R3699214-3 09/01/21 12:36 • (MSD) R3699214-4 09/01/21 12:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.8	U	40.9	40.1	82.1	80.2	1	50.0-150			1.98	20
(S) o-Terphenyl					72.6	68.6		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700505-1 09/04/21 04:25

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	U		0.274	4.00
(S) o-Terphenyl	51.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3700505-2 09/04/21 04:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.6	67.2	50.0-150	
(S) o-Terphenyl			47.9	18.0-148	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3699100-2 09/01/21 07:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	79.1			14.0-149
(S) 2-Fluorobiphenyl	92.3			34.0-125
(S) p-Terphenyl-d14	118			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3699100-1 09/01/21 06:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0790	98.8	49.0-120	
Naphthalene	0.0800	0.0740	92.5	50.0-120	
1-Methylnaphthalene	0.0800	0.0791	98.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0750	93.8	50.0-120	
(S) Nitrobenzene-d5			90.4	14.0-149	
(S) 2-Fluorobiphenyl			98.4	34.0-125	
(S) p-Terphenyl-d14			120	23.0-120	

L1395716-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395716-01 09/01/21 12:53 • (MS) R3699100-3 09/01/21 13:11 • (MSD) R3699100-4 09/01/21 13:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0784	U	0.0730	0.0723	93.1	91.8	1	11.0-130			0.964	29
Naphthalene	0.0784	U	0.0693	0.0717	88.4	91.0	1	10.0-135			3.40	27
1-Methylnaphthalene	0.0784	U	0.0738	0.0764	94.1	97.0	1	10.0-142			3.46	28
2-Methylnaphthalene	0.0784	U	0.0697	0.0721	88.9	91.5	1	10.0-137			3.39	28
(S) Nitrobenzene-d5					80.9	88.7		14.0-149				
(S) 2-Fluorobiphenyl					90.8	97.3		34.0-125				
(S) p-Terphenyl-d14					114	116		23.0-120				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

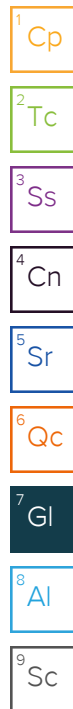
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 2



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

L# 13955345
G125

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks Sample # (lab only)

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):
Parker Coit

Site/Facility ID #
J17E

P.O. #
J17E

Collected by (signature):

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

No.
of
Cnts

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

TPH- GRO, DRO,ORO

BTEX, pH, SAR

1,2,4-trimethylbenzene

1,3,5-trimethylbenzene

arsenic, cadmium, barium, chromium VI

fluorene, naphthalene, nickel, selenium

1-methylbenzene, 2-methylbenzene

20210824-J17E (MW03)
@ 60-62'

Grab

SS

8/24/21

826

2

X

X

X

X

X

X

X

-01

20210824-J17E (MW07) @
15-17'

Grab

SS

8/24/21

1126

2

X

X

X

X

X

X

X

-02

20210824-J17E (MW07) @
25-27'

Grab

SS

8/24/21

1150

2

X

X

X

X

X

X

X

-03

20210824-J17E (MW07) @
35-37'

Grab

SS

8/24/21

1254

2

X

X

X

X

X

X

X

-04

20210824-J17E (MW07) @
45-47'

Grab

SS

8/24/21

1326

2

X

X

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:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

pH Temp

Flow Other

Samples returned via:

UPS FedEx Courier

Tracking # 5016 1232 3466

Sample Receipt Checklist

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

Relinquished by: (Signature)

Sign for PL

Date:

8/25/21

Time:

1300

Received by: (Signature)

[Signature]

Trip Blank Received: Yes/No

HCL/MeOH
TBR

Relinquished by: (Signature)

Date:

8/25/21

Time:

1500

Received by: (Signature)

[Signature]

Temp: °C Bottles Received:

14

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

[Signature]

Date: Time:

8/26/21 0930

Hold:

Condition:

NCF 1 OK

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

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 2 of 2



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):

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

No.
of
Cnts

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

TPH- GRO, DRO, ORO

BTEX, pH, SAR

1,2,4-trimethylbenzene

1,3,5-trimethylbenzene

arsenic, cadmium, barium, chromium VI

flourene, naphthalene, nickel, selenium

1-methlybenzene, 2-methylbenzene

L #

Table #

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

20210824-J17E (MWO7)

Q, 55-57'

Grab

SS

8/24/21

1405

2

X

X

X

X

X

X

X

-06

20210824-J17E (MWO7)

Q, 60-62'

Grab

SS

8/24/21

1456

2

X

X

X

X

X

X

X

-07

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

Remarks:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

pH Temp

Flow Other

Samples returned via:

UPS FedEx Courier

Tracking #

5010 1732 3466

Received by: (Signature)

Trip Blank Received: Yes No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

8/25/21

Time:

1300

Relinquished by: (Signature)

Date:

8/25/21

Time:

1500

Received by: (Signature)

Temp: °C Bottles Received:

1

14

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for Lab by: (Signature)

Date:

Time:

8/26/21

0930

Hold:

Condition:
NCF / OK

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N

COC Signed/Accurate: ☒ Y ☐ N

Bottles arrive intact: ☒ Y ☐ N

Correct bottles used: ☒ Y ☐ N

Sufficient volume sent: ☒ Y ☐ N

If Applicable

VOA Zero Headspace: ☐ Y ☐ N

Preservation Correct/Checked: ☐ Y ☐ N

Caerus Oil and Gas

Sample Delivery Group: L1396510
Samples Received: 08/28/2021
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

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



Pace Analytical National

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

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

SAMPLE SUMMARY

20210825-J17E(MW04)@15-17' L1396510-01 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 08:27

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:11	09/03/21 20:11	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733138	1	09/01/21 16:50	09/02/21 14:12	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735060	1	09/04/21 08:00	09/04/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 01:56	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 12:18	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1733715	1	09/01/21 09:33	09/02/21 17:47	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 00:49	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 08:32	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 19:41	LEA	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20210825-J17E(MW04)@20-22' L1396510-02 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 08:35

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:14	09/03/21 20:14	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733138	1	09/01/21 16:50	09/02/21 14:17	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735060	1	09/04/21 08:00	09/04/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:10	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 12:43	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 14:53	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 01:08	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 11:43	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 20:01	LEA	Mt. Juliet, TN

20210825-J17E(MW04)@35-37' L1396510-03 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 09:27

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:17	09/03/21 20:17	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733138	1	09/01/21 16:50	09/02/21 14:22	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735060	1	09/04/21 08:00	09/04/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:13	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 12:47	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 15:17	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 01:27	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 08:59	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 20:21	LEA	Mt. Juliet, TN

20210825-J17E(MW04)@45-47' L1396510-04 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 10:06

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:19	09/03/21 20:19	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733138	1	09/01/21 16:50	09/02/21 14:28	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735060	1	09/04/21 08:00	09/04/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:16	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 12:50	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 15:41	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 01:47	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 09:26	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 20:41	LEA	Mt. Juliet, TN

SAMPLE SUMMARY

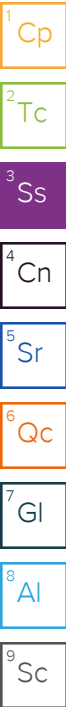
20210825-J17E(MW04)@50-52' L1396510-05 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 10:23

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:22	09/03/21 20:22	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733138	1	09/01/21 16:50	09/02/21 14:33	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735060	1	09/04/21 08:00	09/04/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:24	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 12:54	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 16:05	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 02:06	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 08:45	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 21:00	LEA	Mt. Juliet, TN



20210825-J17E(MW05)@10-12' L1396510-06 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 13:17

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:25	09/03/21 20:25	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733138	1	09/01/21 16:50	09/02/21 14:38	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:27	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 12:57	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 16:28	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 02:26	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 11:16	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 21:20	LEA	Mt. Juliet, TN

20210825-J17E(MW05)@20-22' L1396510-07 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 13:35

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:27	09/03/21 20:27	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733822	1	09/02/21 13:45	09/03/21 12:18	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:30	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 13:01	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 16:52	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 02:45	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 11:02	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 21:40	LEA	Mt. Juliet, TN

20210825-J17E(MW05)@35-37' L1396510-08 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 14:32

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:30	09/03/21 20:30	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733822	1	09/02/21 13:45	09/03/21 12:23	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:32	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 13:04	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 17:16	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 03:04	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 09:13	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 22:00	LEA	Mt. Juliet, TN

SAMPLE SUMMARY

20210825-J17E(MW05)@45-47' L1396510-09 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 15:24

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:33	09/03/21 20:33	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733822	1	09/02/21 13:45	09/03/21 12:29	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:35	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 13:08	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 17:40	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 03:24	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735867	1	09/07/21 00:35	09/07/21 11:56	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/05/21 01:59	LEA	Mt. Juliet, TN

20210825-J17E(MW05)@55-57' L1396510-10 Solid

Collected by
Parker Coit

Collected date/time
08/25/21 16:18

Received date/time
08/28/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731352	1	09/03/21 20:35	09/03/21 20:35	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733822	1	09/02/21 13:45	09/03/21 13:26	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732148	1	08/31/21 17:01	09/04/21 02:38	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732149	5	08/31/21 17:07	09/02/21 13:11	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 09:33	09/04/21 18:10	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1733194	1	09/01/21 09:33	09/02/21 03:43	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1734754	1	09/04/21 06:49	09/05/21 00:04	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735206	1	09/04/21 13:35	09/04/21 22:20	LEA	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.752		1	09/03/2021 20:11	WG1731352

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/02/2021 14:12	WG1733138

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.82	T8	1	09/04/2021 11:00	WG1735060

Sample Narrative:

L1396510-01 WG1735060: 8.82 at 21C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	242	J3 J6	0.0852	0.500	1	09/04/2021 01:56	WG1732148
Cadmium	0.621		0.0471	0.500	1	09/04/2021 01:56	WG1732148
Nickel	14.4		0.132	2.00	1	09/04/2021 01:56	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 01:56	WG1732148

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	11.4		0.100	1.00	5	09/02/2021 12:18	WG1732149

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0460	J	0.0217	0.100	1	09/02/2021 17:47	WG1733715
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.4			77.0-120		09/02/2021 17:47	WG1733715

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100	1	09/02/2021 00:49	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 00:49	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 00:49	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 00:49	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 00:49	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 00:49	WG1733194
(S) Toluene-d8	97.8			75.0-131		09/02/2021 00:49	WG1733194
(S) 4-Bromofluorobenzene	90.8			67.0-138		09/02/2021 00:49	WG1733194
(S) 1,2-Dichloroethane-d4	97.4			70.0-130		09/02/2021 00:49	WG1733194

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	U		1.61	4.00	1	09/07/2021 08:32	WG1735867
C28-C36 Motor Oil Range	0.478	J	0.274	4.00	1	09/07/2021 08:32	WG1735867

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	44.3			18.0-148		09/07/2021 08:32	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 19:41	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 19:41	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 19:41	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 19:41	WG1735206
(S) p-Terphenyl-d14	77.3			23.0-120		09/04/2021 19:41	WG1735206
(S) Nitrobenzene-d5	79.3			14.0-149		09/04/2021 19:41	WG1735206
(S) 2-Fluorobiphenyl	69.2			34.0-125		09/04/2021 19:41	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.926		1	09/03/2021 20:14	WG1731352

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	09/02/2021 14:17	WG1733138

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.97	T8	1	09/04/2021 11:00	WG1735060

Sample Narrative:

L1396510-02 WG1735060: 8.97 at 21.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	251		0.0852	0.500	1	09/04/2021 02:10	WG1732148
Cadmium	0.353	J	0.0471	0.500	1	09/04/2021 02:10	WG1732148
Nickel	16.5		0.132	2.00	1	09/04/2021 02:10	WG1732148
Selenium	0.860	J	0.764	2.00	1	09/04/2021 02:10	WG1732148

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	15.8		0.100	1.00	5	09/02/2021 12:43	WG1732149

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

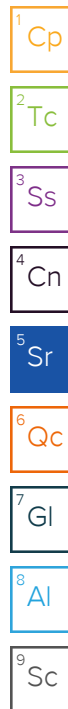
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0506	J	0.0217	0.100	1	09/04/2021 14:53	WG1734738
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.0			77.0-120		09/04/2021 14:53	WG1734738

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	09/02/2021 01:08	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 01:08	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 01:08	WG1733194
Xylenes, Total	0.00113	J	0.000880	0.00650	1	09/02/2021 01:08	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 01:08	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 01:08	WG1733194
(S) Toluene-d8	98.7			75.0-131		09/02/2021 01:08	WG1733194
(S) 4-Bromofluorobenzene	96.7			67.0-138		09/02/2021 01:08	WG1733194
(S) 1,2-Dichloroethane-d4	108			70.0-130		09/02/2021 01:08	WG1733194

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	17.3		1.61	4.00	1	09/07/2021 11:43	WG1735867
C28-C36 Motor Oil Range	87.0		0.274	4.00	1	09/07/2021 11:43	WG1735867



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	40.3			18.0-148		09/07/2021 11:43	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 20:01	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 20:01	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 20:01	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 20:01	WG1735206
(S) p-Terphenyl-d14	87.0			23.0-120		09/04/2021 20:01	WG1735206
(S) Nitrobenzene-d5	80.0			14.0-149		09/04/2021 20:01	WG1735206
(S) 2-Fluorobiphenyl	76.8			34.0-125		09/04/2021 20:01	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.692		1	09/03/2021 20:17	WG1731352

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	09/02/2021 14:22	WG1733138

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	8.77	T8	1	09/04/2021 11:00	WG1735060

Sample Narrative:

L1396510-03 WG1735060: 8.77 at 21.1C

Metals (ICP) by Method 6010B

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Barium	224		0.0852	0.500	1	09/04/2021 02:13	WG1732148
Cadmium	0.305	J	0.0471	0.500	1	09/04/2021 02:13	WG1732148
Nickel	15.9		0.132	2.00	1	09/04/2021 02:13	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:13	WG1732148

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	6.73		0.100	1.00	5	09/02/2021 12:47	WG1732149

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

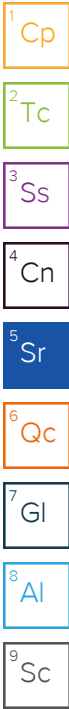
	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
TPH (GC/FID) Low Fraction	0.0294	J	0.0217	0.100	1	09/04/2021 15:17	WG1734738
(S) a,a,a-Trifluorotoluene(FID)	96.1			77.0-120		09/04/2021 15:17	WG1734738

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Benzene	U		0.000467	0.00100	1	09/02/2021 01:27	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 01:27	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 01:27	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 01:27	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 01:27	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 01:27	WG1733194
(S) Toluene-d8	98.1			75.0-131		09/02/2021 01:27	WG1733194
(S) 4-Bromofluorobenzene	99.6			67.0-138		09/02/2021 01:27	WG1733194
(S) 1,2-Dichloroethane-d4	108			70.0-130		09/02/2021 01:27	WG1733194

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
C10-C28 Diesel Range	U		1.61	4.00	1	09/07/2021 08:59	WG1735867
C28-C36 Motor Oil Range	1.37	J	0.274	4.00	1	09/07/2021 08:59	WG1735867



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	42.2			18.0-148		09/07/2021 08:59	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 20:21	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 20:21	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 20:21	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 20:21	WG1735206
(S) p-Terphenyl-d14	71.3			23.0-120		09/04/2021 20:21	WG1735206
(S) Nitrobenzene-d5	71.1			14.0-149		09/04/2021 20:21	WG1735206
(S) 2-Fluorobiphenyl	65.0			34.0-125		09/04/2021 20:21	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.668		1	09/03/2021 20:19	WG1731352

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	09/02/2021 14:28	WG1733138

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.61	T8	1	09/04/2021 11:00	WG1735060

Sample Narrative:

L1396510-04 WG1735060: 8.61 at 21C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	205		0.0852	0.500	1	09/04/2021 02:16	WG1732148
Cadmium	0.447	J	0.0471	0.500	1	09/04/2021 02:16	WG1732148
Nickel	7.86		0.132	2.00	1	09/04/2021 02:16	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:16	WG1732148

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.3		0.100	1.00	5	09/02/2021 12:50	WG1732149

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	09/04/2021 15:41	WG1734738
(S) a,a,a-Trifluorotoluene(FID)	96.9			77.0-120		09/04/2021 15:41	WG1734738

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	09/02/2021 01:47	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 01:47	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 01:47	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 01:47	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 01:47	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 01:47	WG1733194
(S) Toluene-d8	95.3			75.0-131		09/02/2021 01:47	WG1733194
(S) 4-Bromofluorobenzene	101			67.0-138		09/02/2021 01:47	WG1733194
(S) 1,2-Dichloroethane-d4	108			70.0-130		09/02/2021 01:47	WG1733194

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/07/2021 09:26	WG1735867
C28-C36 Motor Oil Range	1.17	J	0.274	4.00	1	09/07/2021 09:26	WG1735867

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	45.1			18.0-148		09/07/2021 09:26	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 20:41	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 20:41	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 20:41	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 20:41	WG1735206
(S) p-Terphenyl-d14	71.6			23.0-120		09/04/2021 20:41	WG1735206
(S) Nitrobenzene-d5	69.5			14.0-149		09/04/2021 20:41	WG1735206
(S) 2-Fluorobiphenyl	63.5			34.0-125		09/04/2021 20:41	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.738		1	09/03/2021 20:22	WG1731352

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	09/02/2021 14:33	WG1733138

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.58	T8	1	09/04/2021 11:00	WG1735060

Sample Narrative:

L1396510-05 WG1735060: 8.58 at 21C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	199		0.0852	0.500	1	09/04/2021 02:24	WG1732148
Cadmium	0.307	J	0.0471	0.500	1	09/04/2021 02:24	WG1732148
Nickel	13.3		0.132	2.00	1	09/04/2021 02:24	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:24	WG1732148

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.28		0.100	1.00	5	09/02/2021 12:54	WG1732149

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	0.0339	J	0.0217	0.100	1	09/04/2021 16:05	WG1734738
(S) a,a,a-Trifluorotoluene(FID)	97.5			77.0-120		09/04/2021 16:05	WG1734738

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	09/02/2021 02:06	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 02:06	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 02:06	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 02:06	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 02:06	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 02:06	WG1733194
(S) Toluene-d8	96.1			75.0-131		09/02/2021 02:06	WG1733194
(S) 4-Bromofluorobenzene	96.2			67.0-138		09/02/2021 02:06	WG1733194
(S) 1,2-Dichloroethane-d4	108			70.0-130		09/02/2021 02:06	WG1733194

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/07/2021 08:45	WG1735867
C28-C36 Motor Oil Range	0.349	J	0.274	4.00	1	09/07/2021 08:45	WG1735867

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	37.5			18.0-148		09/07/2021 08:45	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 21:00	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 21:00	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 21:00	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 21:00	WG1735206
(S) p-Terphenyl-d14	63.0			23.0-120		09/04/2021 21:00	WG1735206
(S) Nitrobenzene-d5	66.1			14.0-149		09/04/2021 21:00	WG1735206
(S) 2-Fluorobiphenyl	57.8			34.0-125		09/04/2021 21:00	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.10		1	09/03/2021 20:25	WG1731352

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/02/2021 14:38	WG1733138

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.63	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1396510-06 WG1735396: 8.63 at 20.9C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	197		0.0852	0.500	1	09/04/2021 02:27	WG1732148
Cadmium	0.239	J	0.0471	0.500	1	09/04/2021 02:27	WG1732148
Nickel	7.11		0.132	2.00	1	09/04/2021 02:27	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:27	WG1732148

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	7.08		0.100	1.00	5	09/02/2021 12:57	WG1732149

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0480	J	0.0217	0.100	1	09/04/2021 16:28	WG1734738
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.8			77.0-120		09/04/2021 16:28	WG1734738

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100	1	09/02/2021 02:26	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 02:26	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 02:26	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 02:26	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 02:26	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 02:26	WG1733194
(S) Toluene-d8	94.8			75.0-131		09/02/2021 02:26	WG1733194
(S) 4-Bromofluorobenzene	96.0			67.0-138		09/02/2021 02:26	WG1733194
(S) 1,2-Dichloroethane-d4	112			70.0-130		09/02/2021 02:26	WG1733194

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	4.18		1.61	4.00	1	09/07/2021 11:16	WG1735867
C28-C36 Motor Oil Range	19.2		0.274	4.00	1	09/07/2021 11:16	WG1735867

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	49.8			18.0-148		09/07/2021 11:16	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 21:20	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 21:20	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 21:20	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 21:20	WG1735206
(S) p-Terphenyl-d14	87.0			23.0-120		09/04/2021 21:20	WG1735206
(S) Nitrobenzene-d5	77.2			14.0-149		09/04/2021 21:20	WG1735206
(S) 2-Fluorobiphenyl	74.1			34.0-125		09/04/2021 21:20	WG1735206

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.28		1	09/03/2021 20:27	WG1731352

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/03/2021 12:18	WG1733822

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.56	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1396510-07 WG1735396: 8.56 at 20.8C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	196		0.0852	0.500	1	09/04/2021 02:30	WG1732148
Cadmium	0.410	J	0.0471	0.500	1	09/04/2021 02:30	WG1732148
Nickel	14.5		0.132	2.00	1	09/04/2021 02:30	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:30	WG1732148

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	12.6		0.100	1.00	5	09/02/2021 13:01	WG1732149

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

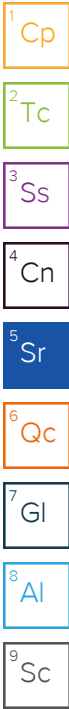
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0709	J	0.0217	0.100	1	09/04/2021 16:52	WG1734738
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.8			77.0-120		09/04/2021 16:52	WG1734738

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100	1	09/02/2021 02:45	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 02:45	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 02:45	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 02:45	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 02:45	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 02:45	WG1733194
(S) Toluene-d8	94.4			75.0-131		09/02/2021 02:45	WG1733194
(S) 4-Bromofluorobenzene	93.1			67.0-138		09/02/2021 02:45	WG1733194
(S) 1,2-Dichloroethane-d4	110			70.0-130		09/02/2021 02:45	WG1733194

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	3.94	J	1.61	4.00	1	09/07/2021 11:02	WG1735867
C28-C36 Motor Oil Range	18.0		0.274	4.00	1	09/07/2021 11:02	WG1735867



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	49.4			18.0-148		09/07/2021 11:02	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 21:40	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 21:40	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 21:40	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 21:40	WG1735206
(S) p-Terphenyl-d14	79.2			23.0-120		09/04/2021 21:40	WG1735206
(S) Nitrobenzene-d5	78.0			14.0-149		09/04/2021 21:40	WG1735206
(S) 2-Fluorobiphenyl	71.8			34.0-125		09/04/2021 21:40	WG1735206

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.878		1	09/03/2021 20:30	WG1731352

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	09/03/2021 12:23	WG1733822

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.48	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1396510-08 WG1735396: 8.48 at 20.9C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	188		0.0852	0.500	1	09/04/2021 02:32	WG1732148
Cadmium	0.375	J	0.0471	0.500	1	09/04/2021 02:32	WG1732148
Nickel	13.0		0.132	2.00	1	09/04/2021 02:32	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:32	WG1732148

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.90		0.100	1.00	5	09/02/2021 13:04	WG1732149

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	0.0553	J	0.0217	0.100	1	09/04/2021 17:16	WG1734738
(S) a,a,a-Trifluorotoluene(FID)	95.4			77.0-120		09/04/2021 17:16	WG1734738

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	09/02/2021 03:04	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 03:04	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 03:04	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 03:04	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 03:04	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 03:04	WG1733194
(S) Toluene-d8	95.0			75.0-131		09/02/2021 03:04	WG1733194
(S) 4-Bromofluorobenzene	93.2			67.0-138		09/02/2021 03:04	WG1733194
(S) 1,2-Dichloroethane-d4	111			70.0-130		09/02/2021 03:04	WG1733194

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/07/2021 09:13	WG1735867
C28-C36 Motor Oil Range	0.289	J	0.274	4.00	1	09/07/2021 09:13	WG1735867

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	40.0			18.0-148		09/07/2021 09:13	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 22:00	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 22:00	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 22:00	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 22:00	WG1735206
(S) p-Terphenyl-d14	46.6			23.0-120		09/04/2021 22:00	WG1735206
(S) Nitrobenzene-d5	55.7			14.0-149		09/04/2021 22:00	WG1735206
(S) 2-Fluorobiphenyl	45.6			34.0-125		09/04/2021 22:00	WG1735206

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.872		1	09/03/2021 20:33	WG1731352

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	09/03/2021 12:29	WG1733822

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.58	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1396510-09 WG1735396: 8.58 at 20.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	262		0.0852	0.500	1	09/04/2021 02:35	WG1732148
Cadmium	0.503		0.0471	0.500	1	09/04/2021 02:35	WG1732148
Nickel	12.0		0.132	2.00	1	09/04/2021 02:35	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:35	WG1732148

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.6		0.100	1.00	5	09/02/2021 13:08	WG1732149

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	0.0294	J	0.0217	0.100	1	09/04/2021 17:40	WG1734738
(S) a,a,a-Trifluorotoluene(FID)	92.1			77.0-120		09/04/2021 17:40	WG1734738

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	09/02/2021 03:24	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 03:24	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 03:24	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 03:24	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 03:24	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 03:24	WG1733194
(S) Toluene-d8	96.9			75.0-131		09/02/2021 03:24	WG1733194
(S) 4-Bromofluorobenzene	98.8			67.0-138		09/02/2021 03:24	WG1733194
(S) 1,2-Dichloroethane-d4	110			70.0-130		09/02/2021 03:24	WG1733194

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	32.2		1.61	4.00	1	09/07/2021 11:56	WG1735867
C28-C36 Motor Oil Range	129		0.274	4.00	1	09/07/2021 11:56	WG1735867

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	41.5			18.0-148		09/07/2021 11:56	WG1735867

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
Fluorene	U		0.00205	0.00600	1	09/05/2021 01:59	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/05/2021 01:59	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/05/2021 01:59	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/05/2021 01:59	WG1735206
(S) p-Terphenyl-d14	90.2			23.0-120		09/05/2021 01:59	WG1735206
(S) Nitrobenzene-d5	79.2			14.0-149		09/05/2021 01:59	WG1735206
(S) 2-Fluorobiphenyl	77.6			34.0-125		09/05/2021 01:59	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.767		1	09/03/2021 20:35	WG1731352

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	09/03/2021 13:26	WG1733822

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1396510-10 WG1735396: 8.32 at 20.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	118		0.0852	0.500	1	09/04/2021 02:38	WG1732148
Cadmium	0.294	J	0.0471	0.500	1	09/04/2021 02:38	WG1732148
Nickel	17.2		0.132	2.00	1	09/04/2021 02:38	WG1732148
Selenium	U		0.764	2.00	1	09/04/2021 02:38	WG1732148

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.88		0.100	1.00	5	09/02/2021 13:11	WG1732149

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

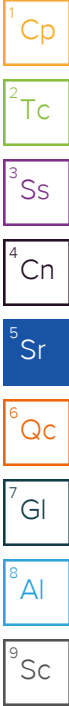
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	09/04/2021 18:10	WG1734738
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.1			77.0-120		09/04/2021 18:10	WG1734738

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	09/02/2021 03:43	WG1733194
Toluene	U		0.00130	0.00500	1	09/02/2021 03:43	WG1733194
Ethylbenzene	U		0.000737	0.00250	1	09/02/2021 03:43	WG1733194
Xylenes, Total	U		0.000880	0.00650	1	09/02/2021 03:43	WG1733194
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/02/2021 03:43	WG1733194
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/02/2021 03:43	WG1733194
(S) <i>Toluene-d8</i>	96.0			75.0-131		09/02/2021 03:43	WG1733194
(S) <i>4</i> -Bromofluorobenzene	96.6			67.0-138		09/02/2021 03:43	WG1733194
(S) <i>1,2</i> -Dichloroethane-d4	107			70.0-130		09/02/2021 03:43	WG1733194

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/05/2021 00:04	WG1734754
C28-C36 Motor Oil Range	0.577	J	0.274	4.00	1	09/05/2021 00:04	WG1734754



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	34.7			18.0-148		09/05/2021 00:04	WG1734754

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
Fluorene	U		0.00205	0.00600	1	09/04/2021 22:20	WG1735206
Naphthalene	U		0.00408	0.0200	1	09/04/2021 22:20	WG1735206
1-Methylnaphthalene	U		0.00449	0.0200	1	09/04/2021 22:20	WG1735206
2-Methylnaphthalene	U		0.00427	0.0200	1	09/04/2021 22:20	WG1735206
(S) p-Terphenyl-d14	55.1			23.0-120		09/04/2021 22:20	WG1735206
(S) Nitrobenzene-d5	63.5			14.0-149		09/04/2021 22:20	WG1735206
(S) 2-Fluorobiphenyl	55.1			34.0-125		09/04/2021 22:20	WG1735206

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699693-1 09/02/21 11:51

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1396487-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1396487-02 09/02/21 12:39 • (DUP) R3699693-7 09/02/21 12:44

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

L1396495-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1396495-02 09/02/21 13:36 • (DUP) R3699693-8 09/02/21 13:41

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

Laboratory Control Sample (LCS)

(LCS) R3699693-2 09/02/21 11:56

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

L1396428-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396428-09 09/02/21 12:05 • (MS) R3699693-3 09/02/21 12:13 • (MSD) R3699693-4 09/02/21 12:18

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	20.8	20.1	104	100	1	75.0-125			3.30	20

Method Blank (MB)

(MB) R3700142-1 09/03/21 11:05

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

L1396428-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1396428-07 09/03/21 11:52 • (DUP) R3700142-3 09/03/21 12:08

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

L1396532-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1396532-06 09/03/21 13:15 • (DUP) R3700142-4 09/03/21 13:20

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

Laboratory Control Sample (LCS)

(LCS) R3700142-2 09/03/21 11:11

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.1	101	80.0-120	

L1396510-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396510-10 09/03/21 13:26 • (MS) R3700142-5 09/03/21 13:31 • (MSD) R3700142-6 09/03/21 13:36

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	20.1	20.3	101	101	1	75.0-125			0.799	20

L1396510-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396510-10 09/03/21 13:26 • (MS) R3700142-7 09/03/21 13:41

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	653	U	638	97.7	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1396497-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396497-01 09/04/21 11:00 • (DUP) R3700412-2 09/04/21 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.01	6.97	1	0.572		1

Sample Narrative:

OS: 7.01 at 21.3C

DUP: 6.97 at 21.1C



L1396510-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1396510-05 09/04/21 11:00 • (DUP) R3700412-3 09/04/21 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.58	8.63	1	0.581		1

Sample Narrative:

OS: 8.58 at 21C

DUP: 8.63 at 21C

Laboratory Control Sample (LCS)

(LCS) R3700412-1 09/04/21 11:00

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

Sample Narrative:

LCS: 10.04 at 22C

L1398387-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398387-01 09/05/21 13:00 • (DUP) R3700581-2 09/05/21 13:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.36	8.39	1	0.358		1

Sample Narrative:

OS: 8.36 at 20.9C

DUP: 8.39 at 20.9C

L1398402-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398402-01 09/05/21 13:00 • (DUP) R3700581-3 09/05/21 13:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.65	8.66	1	0.116		1

Sample Narrative:

OS: 8.65 at 20.6C

DUP: 8.66 at 20.6C

Laboratory Control Sample (LCS)

(LCS) R3700581-1 09/05/21 13:00

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

Sample Narrative:

LCS: 10.06 at 20.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700387-1 09/04/21 01:50

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3700387-2 09/04/21 01:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	98.7	98.7	80.0-120	
Nickel	100	98.8	98.8	80.0-120	
Selenium	100	98.0	98.0	80.0-120	

L1396510-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396510-01 09/04/21 01:56 • (MS) R3700387-5 09/04/21 02:04 • (MSD) R3700387-6 09/04/21 02:07

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 %
Barium	100	242	312	244	70.7	2.21	1	75.0-125	J6	J3 J6	24.7	20
Cadmium	100	0.621	100	93.3	99.6	92.7	1	75.0-125			7.15	20
Nickel	100	14.4	108	101	93.8	87.0	1	75.0-125			6.55	20
Selenium	100	U	99.2	93.9	99.2	93.9	1	75.0-125			5.49	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3699588-1 09/02/21 12:11

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

Laboratory Control Sample (LCS)

(LCS) R3699588-2 09/02/21 12:15

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	89.8	89.8	80.0-120	

L1396510-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396510-01 09/02/21 12:18 • (MS) R3699588-5 09/02/21 12:29 • (MSD) R3699588-6 09/02/21 12:32

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	11.4	107	95.4	95.3	84.0	5	75.0-125			11.2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3699983-2 09/02/21 07:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	98.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3699983-1 09/02/21 07:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.04	73.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3701403-2 09/04/21 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)	100			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3701403-1 09/04/21 11:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.43	98.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3701531-3 09/01/21 23:31

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	97.8			75.0-131
(S) 4-Bromofluorobenzene	93.8			67.0-138
(S) 1,2-Dichloroethane-d4	98.4			70.0-130

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

(LCS) R3701531-1 09/01/21 22:14 • (LCSD) R3701531-2 09/01/21 22:33

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	0.117	0.104	93.6	83.2	70.0-123			11.8	20
Ethylbenzene	0.125	0.123	0.105	98.4	84.0	74.0-126			15.8	20
Toluene	0.125	0.115	0.0979	92.0	78.3	75.0-121			16.1	20
1,2,4-Trimethylbenzene	0.125	0.110	0.0961	88.0	76.9	70.0-126			13.5	20
1,3,5-Trimethylbenzene	0.125	0.117	0.0974	93.6	77.9	73.0-127			18.3	20
Xylenes, Total	0.375	0.372	0.323	99.2	86.1	72.0-127			14.1	20
(S) Toluene-d8				93.1	92.4	75.0-131				
(S) 4-Bromofluorobenzene				96.4	99.1	67.0-138				
(S) 1,2-Dichloroethane-d4				114	119	70.0-130				

L1396510-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396510-01 09/02/21 00:49 • (MS) R3701531-4 09/02/21 06:18 • (MSD) R3701531-5 09/02/21 06:37

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	0.122	0.127	97.6	102	1	10.0-149			4.02	37
Ethylbenzene	0.125	U	0.122	0.130	97.6	104	1	10.0-160			6.35	38
Toluene	0.125	U	0.126	0.129	101	103	1	10.0-156			2.35	38
1,2,4-Trimethylbenzene	0.125	U	0.124	0.115	99.2	92.0	1	10.0-160			7.53	36
1,3,5-Trimethylbenzene	0.125	U	0.123	0.118	98.4	94.4	1	10.0-160			4.15	38
Xylenes, Total	0.375	U	0.379	0.385	101	103	1	10.0-160			1.57	38
(S) Toluene-d8					95.6	95.2		75.0-131				
(S) 4-Bromofluorobenzene					90.3	93.8		67.0-138				
(S) 1,2-Dichloroethane-d4					109	109		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700658-1 09/04/21 22:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	33.7		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	49.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3700658-2 09/04/21 22:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.3	70.6	50.0-150	
(S) o-Terphenyl			52.1	18.0-148	

L1397844-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397844-01 09/04/21 22:27 • (MS) R3700658-3 09/04/21 22:41 • (MSD) R3700658-4 09/04/21 22:55

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.5	U	31.2	27.4	63.0	56.0	1	50.0-150			13.0	20
(S) o-Terphenyl					46.4	39.4		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701387-1 09/07/21 07:37

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	52.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3701387-2 09/07/21 07:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.4	70.8	50.0-150	
(S) o-Terphenyl			52.1	18.0-148	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700623-2 09/04/21 18:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	80.5			14.0-149
(S) 2-Fluorobiphenyl	78.1			34.0-125
(S) p-Terphenyl-d14	92.8			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3700623-1 09/04/21 18:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0636	79.5	49.0-120	
Naphthalene	0.0800	0.0630	78.8	50.0-120	
1-Methylnaphthalene	0.0800	0.0637	79.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0617	77.1	50.0-120	
(S) Nitrobenzene-d5			93.3	14.0-149	
(S) 2-Fluorobiphenyl			86.9	34.0-125	
(S) p-Terphenyl-d14			101	23.0-120	

L1396530-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396530-01 09/04/21 22:40 • (MS) R3700623-3 09/04/21 23:00 • (MSD) R3700623-4 09/04/21 23:20

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 %
Fluorene	0.0780	U	0.0622	0.0548	79.7	69.9	1	11.0-130			12.6	29
Naphthalene	0.0780	U	0.0630	0.0561	80.8	71.6	1	10.0-135			11.6	27
1-Methylnaphthalene	0.0780	0.0129	0.0761	0.0644	81.0	65.7	1	10.0-142			16.7	28
2-Methylnaphthalene	0.0780	0.0123	0.0737	0.0625	78.7	64.0	1	10.0-137			16.4	28
(S) Nitrobenzene-d5					87.9	78.3		14.0-149				
(S) 2-Fluorobiphenyl					80.6	72.8		34.0-125				
(S) p-Terphenyl-d14					95.7	86.2		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
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.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

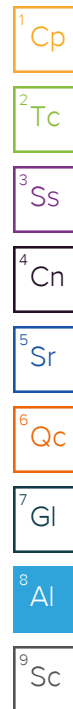
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 2



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



Report to:
bmiddleton@caerusoilandgas.com

Email To:
bmiddleton@caerusoilandgas.com

Project
Description: 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):

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

Immediately
Packed on Ice N ☐ Y ☒

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	TPH- GRO,DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methybenzene, 2-methylbenzene	Remarks	Sample # (lab only)
20210825-J17E (mw04) @ 15-17'	Grab	SS		08/25/21	1427	2	X	X	X	X	X	X		01
20210825-J17E (mw04) @ 20-22'	Grab	SS			1427	2	X	X	X	X	X	X		02
20210825-J17E (mw04) @ 35-37' mw04	Grab	SS			1427	2	X	X	X	X	X	X		03
20210825-J17E (mw04) @ 45-47'	Grab	SS			1427	2	X	X	X	X	X	X		04
20210825-J17E (mw04) @ 50-52'	Grab	SS			1006	2	X	X	X	X	X	X		05
					1023	2	X	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:

Analyze under Protection of Groundwater Soil Screening Level Concentrations pH _____ Temp _____
Risk Based (R) and MCL Based (M) for all soil samples.

Samples returned via:

☐ UPS ☐ FedEx ☐ Courier

Tracking #

Relinquished by: (Signature)

Date:

8/25/21

Time:

19:00

Received by: (Signature)

8/26

Trip Blank Received: Yes / No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

8/26/21

Time:

1500

Received by: (Signature)

Temp: 20.5 °C
Bottles Received: 20

Relinquished by: (Signature)

Date:

8/28/21

Time:

9:15

Received for lab by: (Signature)

Date: 8/28/21 Time: 9:15

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

If preservation required by Login: Date/Time

Hold:

Condition:
NCF 1 OK

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

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 2 of 2



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



Report to:
bmiddleton@caerusoilandgas.com

Email To:
bmiddleton@caerusoilandgas.com

Project
Description: 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):

Rush? (Lab MUST Be Notified)

Quote #

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

Date Results Needed

Standard TAT

No.
of
Cntrs

Immediately
Packed on Ice N ☐ Y ☒

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	TPH- GRO, DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene	Remarks	Sample # (lab only)
20210825-J17E (MWO5) @ 10-12'	Grab	SS		8/25/21	1317	2	X	X	X	X	X	X		-66
20210825-J17E (MWO5) @ 20-22'	Grab	SS			1335	2	X	X	X	X	X	X		-67
20210825-J17E (MWO5) @ 35-37'	Grab	SS			1432	2	X	X	X	X	X	X		-68
20210825-J17E (MWO5) @ 45-47'	Grab	SS			1524	2	X	X	X	X	X	X		-69
20210825-J17E (MWO5) @ 55-57'	Grab	SS			1618	2	X	X	X	X	X	X		-70

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

Remarks:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:

UPS FedEx Courier

Tracking #

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes / No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received:

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

Hold:

Condition:
NCF / OK

Sample Receipt Checklist

COC Seal Present/Intact: ☒ 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

L1396510 *CAERUSPCO* Update

R3/R4/RX/EX

Please update to just be logged for the below

GRO

DRONM

V8260

PH

SAR

ASG

CDICP

BAICP

CR6IC

SV8270PAHSIM

NIICP

SEICP

* _ *

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

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

* *

Thanks,*** * *Chris**

Ward

*Project Manager2_****Pace Analytical National**

*

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

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<u> </u>

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Time estimate: 0h

Time spent: 0h

Members



Chris Ward (responsible)

October 25, 2021

Revised Report

Caerus Oil and Gas

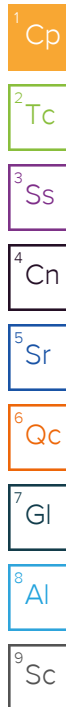
Sample Delivery Group: L1400560
Samples Received: 09/08/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

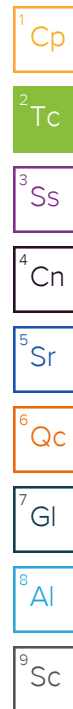


Pace Analytical National

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

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SAMPLE SUMMARY

20210902-J17E(MW04)@60-61.5' L1400560-01 Solid

Collected by
DH

Collected date/time
09/02/21 08:20

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:35	09/13/21 20:35	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 14:34	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738697	1	09/11/21 09:00	09/14/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738021	1	09/11/21 06:37	09/13/21 15:45	JDG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738343	1	09/10/21 10:53	09/11/21 20:02	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738551	1	09/10/21 10:53	09/11/21 18:20	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	10	09/13/21 07:31	09/14/21 00:45	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738621	1	09/12/21 05:45	09/13/21 00:01	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



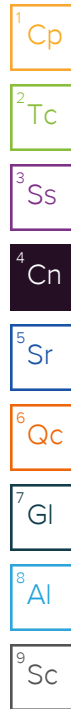
Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 09/17/21 11:23

Project Narrative

Regenerated to include As



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.23		1	09/13/2021 20:35	WG1737266

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	09/16/2021 14:34	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.51	T8	1	09/14/2021 11:00	WG1738697

Sample Narrative:

L1400560-01 WG1738697: 8.51 at 20.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.38		0.518	2.00	1	09/13/2021 15:45	WG1738021
Barium	300		0.0852	0.500	1	09/13/2021 15:45	WG1738021
Cadmium	1.13		0.0471	0.500	1	09/13/2021 15:45	WG1738021
Nickel	14.8		0.132	2.00	1	09/13/2021 15:45	WG1738021
Selenium	1.37	J	0.764	2.00	1	09/13/2021 15:45	WG1738021

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

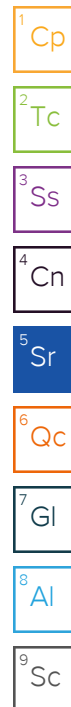
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.469		0.0217	0.100	1	09/11/2021 20:02	WG1738343
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	82.5			77.0-120		09/11/2021 20:02	WG1738343

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	0.00623		0.000467	0.00100	1	09/11/2021 18:20	WG1738551
Toluene	0.0563		0.00130	0.00500	1	09/11/2021 18:20	WG1738551
Ethylbenzene	0.00173	J	0.000737	0.00250	1	09/11/2021 18:20	WG1738551
Xylenes, Total	0.0188		0.000880	0.00650	1	09/11/2021 18:20	WG1738551
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/11/2021 18:20	WG1738551
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/11/2021 18:20	WG1738551
(S) Toluene-d8	108			75.0-131		09/11/2021 18:20	WG1738551
(S) 4-Bromofluorobenzene	93.9			67.0-138		09/11/2021 18:20	WG1738551
(S) 1,2-Dichloroethane-d4	71.4			70.0-130		09/11/2021 18:20	WG1738551

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	98.2		16.1	40.0	10	09/14/2021 00:45	WG1738868
C28-C36 Motor Oil Range	335		2.74	40.0	10	09/14/2021 00:45	WG1738868
(S) <i>o</i> -Terphenyl	56.8			18.0-148		09/14/2021 00:45	WG1738868



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
Fluorene	U		0.00205	0.00600	1	09/13/2021 00:01	WG1738621
Naphthalene	U		0.00408	0.0200	1	09/13/2021 00:01	WG1738621
1-Methylnaphthalene	U		0.00449	0.0200	1	09/13/2021 00:01	WG1738621
2-Methylnaphthalene	U		0.00427	0.0200	1	09/13/2021 00:01	WG1738621
(S) p-Terphenyl-d14	79.2			23.0-120		09/13/2021 00:01	WG1738621
(S) Nitrobenzene-d5	83.4			14.0-149		09/13/2021 00:01	WG1738621
(S) 2-Fluorobiphenyl	67.6			34.0-125		09/13/2021 00:01	WG1738621

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3705376-1 09/16/21 13:03

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

L1400505-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400505-01 09/16/21 13:31 • (DUP) R3705376-3 09/16/21 13:37

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

L1401227-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401227-02 09/16/21 15:46 • (DUP) R3705376-8 09/16/21 15:51

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

Laboratory Control Sample (LCS)

(LCS) R3705376-2 09/16/21 13:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.42	94.2	80.0-120	

L1400560-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400560-01 09/16/21 14:34 • (MS) R3705376-4 09/16/21 14:39 • (MSD) R3705376-5 09/16/21 14:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	17.5	17.2	87.7	86.1	1	75.0-125			1.84	20

L1400560-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400560-01 09/16/21 14:34 • (MS) R3705376-6 09/16/21 14:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	660	U	696	105	50	75.0-125	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1401113-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1401113-01 09/14/21 11:00 • (DUP) R3704081-2 09/14/21 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.31	6.32	1	0.158		1

Sample Narrative:

OS: 6.31 at 20.6C

DUP: 6.32 at 20.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1401136-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1401136-10 09/14/21 11:00 • (DUP) R3704081-3 09/14/21 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.74	8.72	1	0.229		1

Sample Narrative:

OS: 8.74 at 20.7C

DUP: 8.72 at 20.9C

Laboratory Control Sample (LCS)

(LCS) R3704081-1 09/14/21 11:00

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

Sample Narrative:

LCS: 10.04 at 21.3C

Method Blank (MB)

(MB) R3703840-1 09/13/21 15:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.518	2.00
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3703840-2 09/13/21 15:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.2	98.2	80.0-120	
Barium	100	107	107	80.0-120	
Cadmium	100	98.5	98.5	80.0-120	
Nickel	100	102	102	80.0-120	
Selenium	100	100	100	80.0-120	

L1400555-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400555-01 09/13/21 15:08 • (MS) R3703840-5 09/13/21 15:17 • (MSD) R3703840-6 09/13/21 15:20

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 %
Arsenic	100	2.49	102	90.9	99.8	88.4	1	75.0-125			11.8	20
Barium	100	2100	2220	1630	115	0.000	1	75.0-125		J3 V	30.4	20
Cadmium	100	0.184	98.7	88.7	98.5	88.5	1	75.0-125			10.7	20
Nickel	100	23.0	128	119	105	96.3	1	75.0-125			7.29	20
Selenium	100	1.75	101	90.1	99.4	88.4	1	75.0-125			11.5	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703379-2 09/11/21 12:58

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)	92.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3703379-1 09/11/21 12:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.47	99.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703225-3 09/11/21 11:46

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	99.7			67.0-138
(S) 1,2-Dichloroethane-d4	85.4			70.0-130

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

(LCS) R3703225-1 09/11/21 10:28 • (LCSD) R3703225-2 09/11/21 10:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.132	0.130	106	104	70.0-123			1.53	20
Ethylbenzene	0.125	0.138	0.134	110	107	74.0-126			2.94	20
Toluene	0.125	0.124	0.123	99.2	98.4	75.0-121			0.810	20
1,2,4-Trimethylbenzene	0.125	0.138	0.131	110	105	70.0-126			5.20	20
1,3,5-Trimethylbenzene	0.125	0.138	0.134	110	107	73.0-127			2.94	20
Xylenes, Total	0.375	0.433	0.431	115	115	72.0-127			0.463	20
(S) Toluene-d8				101	101	75.0-131				
(S) 4-Bromofluorobenzene				103	104	67.0-138				
(S) 1,2-Dichloroethane-d4				91.5	93.9	70.0-130				

L1400562-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400562-02 09/11/21 18:39 • (MS) R3703225-4 09/11/21 22:31 • (MSD) R3703225-5 09/11/21 22:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.117	0.0885	93.6	70.8	1	10.0-149			27.7	37
Ethylbenzene	0.125	U	0.129	0.103	103	82.4	1	10.0-160			22.4	38
Toluene	0.125	U	0.157	0.122	126	97.6	1	10.0-156			25.1	38
1,2,4-Trimethylbenzene	0.125	U	0.128	0.105	102	84.0	1	10.0-160			19.7	36
1,3,5-Trimethylbenzene	0.125	U	0.129	0.100	103	80.0	1	10.0-160			25.3	38
Xylenes, Total	0.375	U	0.394	0.309	105	82.4	1	10.0-160			24.2	38
(S) Toluene-d8					107	104		75.0-131				
(S) 4-Bromofluorobenzene					96.4	97.9		67.0-138				
(S) 1,2-Dichloroethane-d4					75.8	76.7		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704026-1 09/13/21 15:27

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	1.26	⬇	0.274	4.00
(S) o-Terphenyl	80.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3704026-2 09/13/21 15:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	45.2	90.4	50.0-150	
(S) o-Terphenyl			81.4	18.0-148	

L1400494-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-01 09/13/21 16:08 • (MS) R3704026-3 09/13/21 19:38 • (MSD) R3704026-4 09/13/21 20:13

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	4.76	40.8	40.2	72.1	70.9	1	50.0-150			1.48	20
(S) o-Terphenyl					60.4	57.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703921-2 09/12/21 18:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	88.1			14.0-149
(S) 2-Fluorobiphenyl	75.5			34.0-125
(S) p-Terphenyl-d14	90.6			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3703921-1 09/12/21 18:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0593	74.1	49.0-120	
Naphthalene	0.0800	0.0603	75.4	50.0-120	
1-Methylnaphthalene	0.0800	0.0571	71.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0549	68.6	50.0-120	
(S) Nitrobenzene-d5			90.6	14.0-149	
(S) 2-Fluorobiphenyl			74.3	34.0-125	
(S) p-Terphenyl-d14			87.1	23.0-120	

L1400554-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400554-04 09/12/21 18:49 • (MS) R3703921-3 09/12/21 19:06 • (MSD) R3703921-4 09/12/21 19:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0784	U	0.0563	0.0620	71.8	79.1	1	11.0-130			9.64	29
Naphthalene	0.0784	0.00701	0.0589	0.0627	66.2	71.0	1	10.0-135			6.25	27
1-Methylnaphthalene	0.0784	0.00943	0.0552	0.0583	58.4	62.3	1	10.0-142			5.46	28
2-Methylnaphthalene	0.0784	U	0.0446	0.0477	56.9	60.8	1	10.0-137			6.72	28
(S) Nitrobenzene-d5					87.6	85.8		14.0-149				
(S) 2-Fluorobiphenyl					65.2	65.5		34.0-125				
(S) p-Terphenyl-d14					81.6	82.3		23.0-120				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Billing Information:

Same as above

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):

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on Ice N ☐ Y ☒

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

Date Results Needed

Standard TAT

No.
of
Cnts

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	TPH - GRO, DRO, ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	fluorene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene						
2010902-J17E (MW04) c 40-41.5'	Grab	SS	X	9/2/21	820	2	X	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:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:

☐ UPS ☐ FedEx ☐ Courier

Tracking # 5016 1232 3076

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes ☒ No ☐
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 5.1 ± 0.5
Bottles Received: 2

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 9/8/21 Time: 915

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / OK

Chain of Custody Page 1 of 1



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



L # 1900560
A053

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

Caerus Oil and Gas

Sample Delivery Group: L1397312
Samples Received: 08/31/2021
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

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



Pace Analytical National

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

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SAMPLE SUMMARY

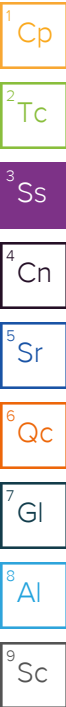
20210826-J17E(MW06)@15-17' L1397312-01 Solid

Collected by
Parker Coit

Collected date/time
08/26/21 11:13

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:26	09/06/21 18:26	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:23	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:38	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:32	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735432	1	09/01/21 20:15	09/05/21 22:10	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 00:39	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	1	09/06/21 01:33	09/08/21 06:43	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 12:38	AAT	Mt. Juliet, TN



20210826-J17E(MW06)@20-22' L1397312-02 Solid

Collected by
Parker Coit

Collected date/time
08/26/21 12:36

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:29	09/06/21 18:29	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:28	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:41	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:35	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735432	1	09/01/21 20:15	09/05/21 22:32	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 00:58	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	1	09/06/21 01:33	09/06/21 21:20	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 12:57	AAT	Mt. Juliet, TN

20210826-J17E(MW06)@35-37' L1397312-03 Solid

Collected by
Parker Coit

Collected date/time
08/26/21 13:38

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:32	09/06/21 18:32	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:33	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:44	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:57	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 03:36	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 01:17	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	5	09/06/21 01:33	09/06/21 22:13	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 13:17	AAT	Mt. Juliet, TN

20210826-J17E(MW06)@45-47' L1397312-04 Solid

Collected by
Parker Coit

Collected date/time
08/26/21 14:13

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:34	09/06/21 18:34	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:54	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:52	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 12:00	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 03:59	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 01:36	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	1	09/06/21 01:33	09/06/21 20:28	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 13:37	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20210826-J17E(MW06)@55-57' L1397312-05 Solid

Collected by
Parker Coit

Collected date/time
08/26/21 14:50

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:42	09/06/21 18:42	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:38	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:54	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 12:04	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 04:23	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 01:55	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	1	09/06/21 01:33	09/06/21 20:41	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 13:57	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.859		1	09/06/2021 18:26	WG1733671

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	09/08/2021 16:23	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.97	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397312-01 WG1735788: 8.97 at 20.9C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	320		0.0852	0.500	1	09/04/2021 03:38	WG1732899
Cadmium	0.251	J	0.0471	0.500	1	09/04/2021 03:38	WG1732899
Nickel	12.6		0.132	2.00	1	09/04/2021 03:38	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:38	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.7		0.100	1.00	5	09/02/2021 11:32	WG1732894

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

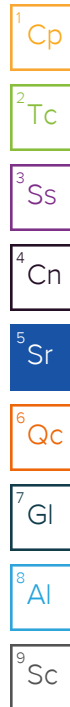
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.291		0.0217	0.100	1	09/05/2021 22:10	WG1735432
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.3			77.0-120		09/05/2021 22:10	WG1735432

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	0.000550	J	0.000467	0.00100	1	09/05/2021 00:39	WG1735126
Toluene	0.00168	J	0.00130	0.00500	1	09/05/2021 00:39	WG1735126
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 00:39	WG1735126
Xylenes, Total	0.00113	J	0.000880	0.00650	1	09/05/2021 00:39	WG1735126
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 00:39	WG1735126
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 00:39	WG1735126
(S) Toluene-d8	116			75.0-131		09/05/2021 00:39	WG1735126
(S) 4-Bromofluorobenzene	93.9			67.0-138		09/05/2021 00:39	WG1735126
(S) 1,2-Dichloroethane-d4	102			70.0-130		09/05/2021 00:39	WG1735126

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	12.9		1.61	4.00	1	09/08/2021 06:43	WG1735386
C28-C36 Motor Oil Range	52.3		0.274	4.00	1	09/08/2021 06:43	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	66.8			18.0-148		09/08/2021 06:43	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 12:38	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 12:38	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 12:38	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 12:38	WG1735500
(S) p-Terphenyl-d14	116			23.0-120		09/07/2021 12:38	WG1735500
(S) Nitrobenzene-d5	67.4			14.0-149		09/07/2021 12:38	WG1735500
(S) 2-Fluorobiphenyl	90.9			34.0-125		09/07/2021 12:38	WG1735500

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.828		1	09/06/2021 18:29	WG1733671

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	09/08/2021 16:28	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397312-02 WG1735788: 8.7 at 21C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	191		0.0852	0.500	1	09/04/2021 03:41	WG1732899
Cadmium	0.436	J	0.0471	0.500	1	09/04/2021 03:41	WG1732899
Nickel	15.4		0.132	2.00	1	09/04/2021 03:41	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:41	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.91		0.100	1.00	5	09/02/2021 11:35	WG1732894

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

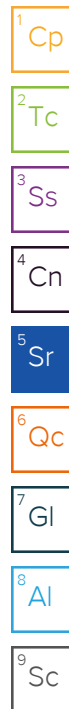
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.314		0.0217	0.100	1	09/05/2021 22:32	WG1735432
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.8			77.0-120		09/05/2021 22:32	WG1735432

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	09/05/2021 00:58	WG1735126
Toluene	U		0.00130	0.00500	1	09/05/2021 00:58	WG1735126
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 00:58	WG1735126
Xylenes, Total	U		0.000880	0.00650	1	09/05/2021 00:58	WG1735126
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 00:58	WG1735126
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 00:58	WG1735126
(S) Toluene-d8	114			75.0-131		09/05/2021 00:58	WG1735126
(S) 4-Bromofluorobenzene	89.9			67.0-138		09/05/2021 00:58	WG1735126
(S) 1,2-Dichloroethane-d4	102			70.0-130		09/05/2021 00:58	WG1735126

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	5.53		1.61	4.00	1	09/06/2021 21:20	WG1735386
C28-C36 Motor Oil Range	21.0		0.274	4.00	1	09/06/2021 21:20	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	62.9			18.0-148		09/06/2021 21:20	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 12:57	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 12:57	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 12:57	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 12:57	WG1735500
(S) p-Terphenyl-d14	113			23.0-120		09/07/2021 12:57	WG1735500
(S) Nitrobenzene-d5	65.9			14.0-149		09/07/2021 12:57	WG1735500
(S) 2-Fluorobiphenyl	88.7			34.0-125		09/07/2021 12:57	WG1735500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.959		1	09/06/2021 18:32	WG1733671

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	09/08/2021 16:33	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.82	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397312-03 WG1735788: 8.82 at 20.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	236		0.0852	0.500	1	09/04/2021 03:44	WG1732899
Cadmium	0.400	J	0.0471	0.500	1	09/04/2021 03:44	WG1732899
Nickel	13.7		0.132	2.00	1	09/04/2021 03:44	WG1732899
Selenium	0.940	J	0.764	2.00	1	09/04/2021 03:44	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.27		0.100	1.00	5	09/02/2021 11:57	WG1732894

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

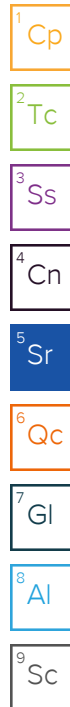
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.29		0.0217	0.100	1	09/09/2021 03:36	WG1735597
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	84.6			77.0-120		09/09/2021 03:36	WG1735597

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	0.00117		0.000467	0.00100	1	09/05/2021 01:17	WG1735126
Toluene	0.00340	J	0.00130	0.00500	1	09/05/2021 01:17	WG1735126
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 01:17	WG1735126
Xylenes, Total	0.00202	J	0.000880	0.00650	1	09/05/2021 01:17	WG1735126
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 01:17	WG1735126
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 01:17	WG1735126
(S) Toluene-d8	112			75.0-131		09/05/2021 01:17	WG1735126
(S) 4-Bromofluorobenzene	91.4			67.0-138		09/05/2021 01:17	WG1735126
(S) 1,2-Dichloroethane-d4	97.5			70.0-130		09/05/2021 01:17	WG1735126

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	32.6		8.05	20.0	5	09/06/2021 22:13	WG1735386
C28-C36 Motor Oil Range	148		1.37	20.0	5	09/06/2021 22:13	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	63.2			18.0-148		09/06/2021 22:13	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 13:17	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 13:17	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 13:17	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 13:17	WG1735500
(S) p-Terphenyl-d14	96.1			23.0-120		09/07/2021 13:17	WG1735500
(S) Nitrobenzene-d5	62.2			14.0-149		09/07/2021 13:17	WG1735500
(S) 2-Fluorobiphenyl	80.5			34.0-125		09/07/2021 13:17	WG1735500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.20		1	09/06/2021 18:34	WG1733671

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	09/08/2021 16:54	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.78	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397312-04 WG1735788: 8.78 at 20.9C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	257		0.0852	0.500	1	09/04/2021 03:52	WG1732899
Cadmium	0.358	J	0.0471	0.500	1	09/04/2021 03:52	WG1732899
Nickel	13.0		0.132	2.00	1	09/04/2021 03:52	WG1732899
Selenium	0.830	J	0.764	2.00	1	09/04/2021 03:52	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.72		0.100	1.00	5	09/02/2021 12:00	WG1732894

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

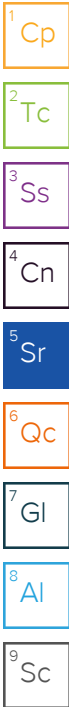
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.152		0.0217	0.100	1	09/09/2021 03:59	WG1735597
(S) a,a,a-Trifluorotoluene(FID)	95.4			77.0-120		09/09/2021 03:59	WG1735597

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	09/05/2021 01:36	WG1735126
Toluene	U		0.00130	0.00500	1	09/05/2021 01:36	WG1735126
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 01:36	WG1735126
Xylenes, Total	U		0.000880	0.00650	1	09/05/2021 01:36	WG1735126
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 01:36	WG1735126
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 01:36	WG1735126
(S) Toluene-d8	113			75.0-131		09/05/2021 01:36	WG1735126
(S) 4-Bromofluorobenzene	92.6			67.0-138		09/05/2021 01:36	WG1735126
(S) 1,2-Dichloroethane-d4	98.3			70.0-130		09/05/2021 01:36	WG1735126

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.48	J	1.61	4.00	1	09/06/2021 20:28	WG1735386
C28-C36 Motor Oil Range	8.17		0.274	4.00	1	09/06/2021 20:28	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	56.8			18.0-148		09/06/2021 20:28	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 13:37	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 13:37	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 13:37	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 13:37	WG1735500
(S) p-Terphenyl-d14	96.7			23.0-120		09/07/2021 13:37	WG1735500
(S) Nitrobenzene-d5	62.4			14.0-149		09/07/2021 13:37	WG1735500
(S) 2-Fluorobiphenyl	80.5			34.0-125		09/07/2021 13:37	WG1735500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.07		1	09/06/2021 18:42	WG1733671

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	09/08/2021 16:38	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.77	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397312-05 WG1735788: 8.77 at 21C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	149		0.0852	0.500	1	09/04/2021 03:54	WG1732899
Cadmium	0.284	J	0.0471	0.500	1	09/04/2021 03:54	WG1732899
Nickel	18.1		0.132	2.00	1	09/04/2021 03:54	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:54	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.0		0.100	1.00	5	09/02/2021 12:04	WG1732894

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

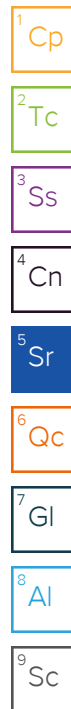
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.150		0.0217	0.100	1	09/09/2021 04:23	WG1735597
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.0			77.0-120		09/09/2021 04:23	WG1735597

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	09/05/2021 01:55	WG1735126
Toluene	0.00138	J	0.00130	0.00500	1	09/05/2021 01:55	WG1735126
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 01:55	WG1735126
Xylenes, Total	0.000900	J	0.000880	0.00650	1	09/05/2021 01:55	WG1735126
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 01:55	WG1735126
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 01:55	WG1735126
(S) Toluene-d8	112			75.0-131		09/05/2021 01:55	WG1735126
(S) 4-Bromofluorobenzene	90.9			67.0-138		09/05/2021 01:55	WG1735126
(S) 1,2-Dichloroethane-d4	98.0			70.0-130		09/05/2021 01:55	WG1735126

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/06/2021 20:41	WG1735386
C28-C36 Motor Oil Range	2.84	J	0.274	4.00	1	09/06/2021 20:41	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	40.1			18.0-148		09/06/2021 20:41	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 13:57	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 13:57	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 13:57	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 13:57	WG1735500
(S) p-Terphenyl-d14	90.8			23.0-120		09/07/2021 13:57	WG1735500
(S) Nitrobenzene-d5	59.6			14.0-149		09/07/2021 13:57	WG1735500
(S) 2-Fluorobiphenyl	75.1			34.0-125		09/07/2021 13:57	WG1735500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701887-1 09/08/21 15:49

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

L1397311-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1397311-02 09/08/21 16:02 • (DUP) R3701887-3 09/08/21 16:07

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

L1397311-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397311-03 09/08/21 17:20 • (DUP) R3701887-8 09/08/21 17:25

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

Laboratory Control Sample (LCS)

(LCS) R3701887-2 09/08/21 15:57

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

L1397312-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397312-04 09/08/21 16:54 • (MS) R3701887-4 09/08/21 16:59 • (MSD) R3701887-5 09/08/21 17:04

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	19.4	19.4	96.9	96.8	1	75.0-125			0.0686	20

L1397312-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1397312-04 09/08/21 16:54 • (MS) R3701887-6 09/08/21 17:09

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	639	U	622	97.4	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1397311-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397311-03 09/06/21 21:15 • (DUP) R3700842-2 09/06/21 21:15

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.34	8.32	1	0.240		1

Sample Narrative:

OS: 8.34 at 20.5C

DUP: 8.32 at 20.6C

L1397935-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1397935-01 09/06/21 21:15 • (DUP) R3700842-3 09/06/21 21:15

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.43	8.45	1	0.237		1

Sample Narrative:

OS: 8.43 at 21C

DUP: 8.45 at 21.1C

Laboratory Control Sample (LCS)

(LCS) R3700842-1 09/06/21 21:15

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

Sample Narrative:

LCS: 10.05 at 24C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700388-1 09/04/21 02:46

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3700388-2 09/04/21 02:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	99.1	99.1	80.0-120	
Nickel	100	99.2	99.2	80.0-120	
Selenium	100	98.1	98.1	80.0-120	

L1396495-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396495-01 09/04/21 02:51 • (MS) R3700388-5 09/04/21 02:59 • (MSD) R3700388-6 09/04/21 03:02

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	198	294	302	95.5	103	1	75.0-125			2.63	20
Nickel	100	20.7	121	114	99.9	93.7	1	75.0-125			5.20	20
Selenium	100	U	104	98.9	104	98.9	1	75.0-125			4.79	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3699508-1 09/02/21 10:23

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) R3699508-2 09/02/21 10:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	87.7	87.7	80.0-120	

L1396495-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396495-01 09/02/21 10:30 • (MS) R3699508-5 09/02/21 10:41 • (MSD) R3699508-6 09/02/21 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 %
Arsenic	100	2.00	92.5	87.2	90.5	85.2	5	75.0-125			5.93	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701352-1 09/05/21 19:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0282	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3701352-2 09/05/21 20:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.48	81.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			113	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3702151-2 09/09/21 01:37

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

Laboratory Control Sample (LCS)

(LCS) R3702151-1 09/09/21 00:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.88	107	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700905-3 09/04/21 20:51

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	114			75.0-131
(S) 4-Bromofluorobenzene	94.3			67.0-138
(S) 1,2-Dichloroethane-d4	99.9			70.0-130

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

(LCS) R3700905-1 09/04/21 19:34 • (LCSD) R3700905-2 09/04/21 19:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.131	0.126	105	101	70.0-123			3.89	20
Ethylbenzene	0.125	0.135	0.133	108	106	74.0-126			1.49	20
Toluene	0.125	0.131	0.126	105	101	75.0-121			3.89	20
1,2,4-Trimethylbenzene	0.125	0.139	0.135	111	108	70.0-126			2.92	20
1,3,5-Trimethylbenzene	0.125	0.137	0.133	110	106	73.0-127			2.96	20
Xylenes, Total	0.375	0.386	0.372	103	99.2	72.0-127			3.69	20
(S) Toluene-d8				108	107	75.0-131				
(S) 4-Bromofluorobenzene				97.2	94.6	67.0-138				
(S) 1,2-Dichloroethane-d4				107	107	70.0-130				

L1397311-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397311-01 09/04/21 23:05 • (MS) R3700905-4 09/05/21 03:30 • (MSD) R3700905-5 09/05/21 03:49

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.124	0.0111	0.358	0.347	280	271	1	10.0-149	J5	J5	3.12	37
Ethylbenzene	0.124	0.132	1.14	1.09	813	773	1	10.0-160	J5	J5	4.48	38
Toluene	0.124	0.214	2.47	2.36	1820	1730	1	10.0-156	J5	J5	4.55	38
1,2,4-Trimethylbenzene	0.124	0.471	2.60	2.45	1720	1600	1	10.0-160	E J5	J5	5.94	36
1,3,5-Trimethylbenzene	0.124	0.492	2.68	2.49	1760	1610	1	10.0-160	E J5	E J5	7.35	38
Xylenes, Total	0.372	1.84	12.7	12.4	2920	2840	1	10.0-160	V	V	2.39	38
(S) Toluene-d8					98.8	105		75.0-131				
(S) 4-Bromofluorobenzene					97.8	114		67.0-138				
(S) 1,2-Dichloroethane-d4					100	100		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700963-1 09/06/21 18:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	69.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3700963-2 09/06/21 18:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.9	79.8	50.0-150	
(S) o-Terphenyl			68.9	18.0-148	

L1396555-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396555-03 09/07/21 23:42 • (MS) R3701429-1 09/07/21 23:55 • (MSD) R3701429-2 09/08/21 00:08

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 %
C10-C28 Diesel Range	47.8	5.67	42.2	42.8	76.4	76.9	1	50.0-150			1.41	20
(S) o-Terphenyl					68.2	72.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701160-2 09/07/21 07:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	71.2			14.0-149
(S) 2-Fluorobiphenyl	91.7			34.0-125
(S) p-Terphenyl-d14	114			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3701160-1 09/07/21 06:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0779	97.4	49.0-120	
Naphthalene	0.0800	0.0733	91.6	50.0-120	
1-Methylnaphthalene	0.0800	0.0788	98.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0739	92.4	50.0-120	
(S) Nitrobenzene-d5			80.0	14.0-149	
(S) 2-Fluorobiphenyl			103	34.0-125	
(S) p-Terphenyl-d14			126	23.0-120	J1

L1397311-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397311-01 09/07/21 08:40 • (MS) R3701160-3 09/07/21 09:00 • (MSD) R3701160-4 09/07/21 09:20

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 %
Fluorene	0.0772	U	0.0518	0.215	67.1	276	1	11.0-130		J3 J5	122	29
Naphthalene	0.0772	0.0157	0.0710	0.128	71.6	144	1	10.0-135		J3 J5	57.3	27
1-Methylnaphthalene	0.0772	0.0103	0.0661	0.0937	72.3	107	1	10.0-142		J3	34.5	28
2-Methylnaphthalene	0.0772	0.0266	0.0821	0.182	71.9	199	1	10.0-137		J3 J5	75.7	28
(S) Nitrobenzene-d5					87.5	125		14.0-149				
(S) 2-Fluorobiphenyl					70.7	88.8		34.0-125				
(S) p-Terphenyl-d14					78.9	106		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

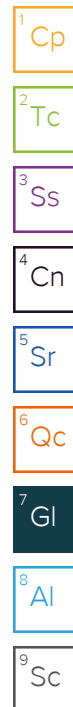
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

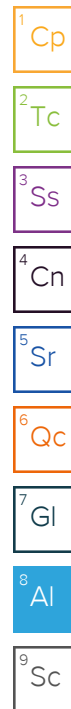
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Billing Information:

Same as above

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):
Parker Coit
Site/Facility ID #
J17E

P.O. #
J17E

Collected by (signature):
Immediately
Packed on Ice N ☐ Y ☒
Rush? (Lab MUST Be Notified)
☐ Same Day ☒ Five Day
☐ Next Day ☐ 5 Day (Rad Only)
☐ Two Day ☐ 10 Day (Rad Only)
☐ Three Day

Quote #

Date Results Needed

Standard TAT

No.
of
Cntrs

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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



L# 1397312
A161

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH - GRO, DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene				
20210826-J17E (MWO6) @ 15-17'	Grab	SS		8/26/21	1113	2	X	X	X	X	X	X	X				J01
20210826-J17E (MWO6) @ 20-22'	Grab	SS			1236	2	X	X	X	X	X	X	X				J02
20210826-J17E (MWO6) @ 35-37'	Grab	SS			1338	2	X	X	X	X	X	X	X				J03
20210826-J17E (MWO6) @ 45-47'	Grab	SS			1413	2	X	X	X	X	X	X	X				J04
20210826-J17E (MWO6) @ 55-57'	Grab	SS			1450	2	X	X	X	X	X	X	X				J05

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

Remarks:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

Samples returned via:

UPS FedEx Courier

pH Temp

Flow Other

Tracking # 5016 1232 0927

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 Headpace: ☐ Y ☐ N
Preservation Correct/Checked: ☐ Y ☐ N

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes / ☒ No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 60°C
1.5 ± 0.1-1.5 10
Bottles Received:

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 8/31/21
Time: 1000

Hold:

Condition:
NCF (OK)

September 13, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1398565
Samples Received: 09/02/2021
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

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

Pace Analytical National

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

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SAMPLE SUMMARY

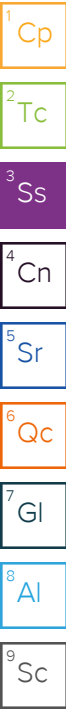
20210831-J17E (MW08) @ 20-21.5' L1398565-01 Solid

Collected by
Parker Coit

Collected date/time
08/31/21 11:40

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:26	09/08/21 20:26	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:34	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737192	1	09/09/21 09:00	09/09/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:20	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:38	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735934	100	09/03/21 19:07	09/07/21 18:35	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	8	09/03/21 19:07	09/05/21 04:16	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/09/21 23:05	TJD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	5	09/08/21 09:30	09/10/21 04:45	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 21:23	AAT	Mt. Juliet, TN



20210831-J17E (MW08) @ 30-31.5' L1398565-02 Solid

Collected by
Parker Coit

Collected date/time
08/31/21 11:55

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:29	09/08/21 20:29	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:39	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737192	1	09/09/21 09:00	09/09/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:23	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:42	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 11:25	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/05/21 00:27	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/10/21 00:27	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 21:41	AAT	Mt. Juliet, TN

20210831-J17E (MW08) @ 40-41.5' L1398565-03 Solid

Collected by
Parker Coit

Collected date/time
08/31/21 13:05

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:32	09/08/21 20:32	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:45	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737192	1	09/09/21 09:00	09/09/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:26	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:45	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 11:47	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/05/21 00:46	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/10/21 00:13	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 21:59	AAT	Mt. Juliet, TN

20210831-J17E (MW08) @ 50-52' L1398565-04 Solid

Collected by
Parker Coit

Collected date/time
08/31/21 13:30

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:34	09/08/21 20:34	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:50	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737192	1	09/09/21 09:00	09/09/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:29	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:48	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 12:09	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/05/21 01:06	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/09/21 23:32	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 22:16	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20210831-J17E (MW08) @ 60-62' L1398565-05 Solid

Collected by
Parker Coit

Collected date/time
08/31/21 14:05

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:37	09/08/21 20:37	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1736603	1	09/08/21 08:00	09/09/21 15:52	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737192	1	09/09/21 09:00	09/09/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:32	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:51	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 12:31	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/05/21 01:25	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/09/21 22:38	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 19:00	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

20210831-J17E (MW08) @ 65-66.3' L1398565-06 Solid

Collected by
Parker Coit

Collected date/time
08/31/21 14:40

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:40	09/08/21 20:40	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1736603	1	09/08/21 08:00	09/09/21 15:57	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737192	1	09/09/21 09:00	09/09/21 11:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:35	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:55	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735945	1	09/03/21 19:07	09/10/21 08:27	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/05/21 01:44	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/10/21 00:40	TJD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	2	09/08/21 09:30	09/10/21 11:48	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 22:34	AAT	Mt. Juliet, TN

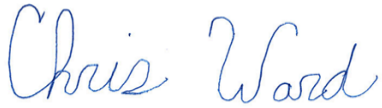
⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	19.3		1	09/08/2021 20:26	WG1734458

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 21:34	WG1735560

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	9.44	T8	1	09/09/2021 11:00	WG1737192

Sample Narrative:

L1398565-01 WG1737192: 9.44 at 20.6C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	518		0.0852	0.500	1	09/08/2021 10:20	WG1734439
Cadmium	0.375	J	0.0471	0.500	1	09/08/2021 10:20	WG1734439
Nickel	17.7		0.132	2.00	1	09/08/2021 10:20	WG1734439
Selenium	2.85		0.764	2.00	1	09/08/2021 10:20	WG1734439

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	17.0		0.100	1.00	5	09/06/2021 01:38	WG1734436

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	374		2.17	10.0	100	09/07/2021 18:35	WG1735934
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	90.1			77.0-120		09/07/2021 18:35	WG1735934

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.00374	0.00800	8	09/05/2021 04:16	WG1735178
Toluene	U		0.0104	0.0400	8	09/05/2021 04:16	WG1735178
Ethylbenzene	0.262		0.00590	0.0200	8	09/05/2021 04:16	WG1735178
Xylenes, Total	6.31		0.00704	0.0520	8	09/05/2021 04:16	WG1735178
1,2,4-Trimethylbenzene	4.64		0.0126	0.0400	8	09/05/2021 04:16	WG1735178
1,3,5-Trimethylbenzene	4.98		0.0160	0.0400	8	09/05/2021 04:16	WG1735178
(S) Toluene-d8	102			75.0-131		09/05/2021 04:16	WG1735178
(S) 4-Bromofluorobenzene	114			67.0-138		09/05/2021 04:16	WG1735178
(S) 1,2-Dichloroethane-d4	88.5			70.0-130		09/05/2021 04:16	WG1735178

Sample Narrative:

L1398565-01 WG1735178: Non-target compounds too high to run at a lower dilution.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	515		8.05	20.0	5	09/10/2021 04:45	WG1736255
C28-C36 Motor Oil Range	65.1		0.274	4.00	1	09/09/2021 23:05	WG1736255
(S) o-Terphenyl	56.6			18.0-148		09/10/2021 04:45	WG1736255
(S) o-Terphenyl	44.2			18.0-148		09/09/2021 23:05	WG1736255

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
Fluorene	0.0893		0.00205	0.00600	1	09/09/2021 21:23	WG1736874
Naphthalene	1.08		0.00408	0.0200	1	09/09/2021 21:23	WG1736874
1-Methylnaphthalene	0.878		0.00449	0.0200	1	09/09/2021 21:23	WG1736874
2-Methylnaphthalene	1.96		0.00427	0.0200	1	09/09/2021 21:23	WG1736874
(S) p-Terphenyl-d14	89.2			23.0-120		09/09/2021 21:23	WG1736874
(S) Nitrobenzene-d5	0.000	J2		14.0-149		09/09/2021 21:23	WG1736874
(S) 2-Fluorobiphenyl	68.2			34.0-125		09/09/2021 21:23	WG1736874

Sample Narrative:

L1398565-01 WG1736874: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	10.9		1	09/08/2021 20:29	WG1734458

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 21:39	WG1735560

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	9.90	T8	1	09/09/2021 11:00	WG1737192

Sample Narrative:

L1398565-02 WG1737192: 9.9 at 20.4C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	260		0.0852	0.500	1	09/08/2021 10:23	WG1734439
Cadmium	0.522		0.0471	0.500	1	09/08/2021 10:23	WG1734439
Nickel	14.9		0.132	2.00	1	09/08/2021 10:23	WG1734439
Selenium	2.73		0.764	2.00	1	09/08/2021 10:23	WG1734439

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	13.4		0.100	1.00	5	09/06/2021 01:42	WG1734436

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	1.27		0.0217	0.100	1	09/10/2021 11:25	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.7			77.0-120		09/10/2021 11:25	WG1735942

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	0.00145		0.000467	0.00100	1	09/05/2021 00:27	WG1735178
Toluene	0.0352		0.00130	0.00500	1	09/05/2021 00:27	WG1735178
Ethylbenzene	0.0185		0.000737	0.00250	1	09/05/2021 00:27	WG1735178
Xylenes, Total	0.428		0.000880	0.00650	1	09/05/2021 00:27	WG1735178
1,2,4-Trimethylbenzene	0.108		0.00158	0.00500	1	09/05/2021 00:27	WG1735178
1,3,5-Trimethylbenzene	0.123		0.00200	0.00500	1	09/05/2021 00:27	WG1735178
(S) Toluene-d8	108			75.0-131		09/05/2021 00:27	WG1735178
(S) 4-Bromofluorobenzene	91.3			67.0-138		09/05/2021 00:27	WG1735178
(S) 1,2-Dichloroethane-d4	83.4			70.0-130		09/05/2021 00:27	WG1735178

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	36.2		1.61	4.00	1	09/10/2021 00:27	WG1736255
C28-C36 Motor Oil Range	136		0.274	4.00	1	09/10/2021 00:27	WG1736255

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	46.0			18.0-148		09/10/2021 00:27	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 21:41	WG1736874
Naphthalene	0.00659	J	0.00408	0.0200	1	09/09/2021 21:41	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 21:41	WG1736874
2-Methylnaphthalene	0.00760	J	0.00427	0.0200	1	09/09/2021 21:41	WG1736874
(S) p-Terphenyl-d14	83.7			23.0-120		09/09/2021 21:41	WG1736874
(S) Nitrobenzene-d5	63.9			14.0-149		09/09/2021 21:41	WG1736874
(S) 2-Fluorobiphenyl	68.9			34.0-125		09/09/2021 21:41	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	26.7		1	09/08/2021 20:32	WG1734458

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	09/08/2021 21:45	WG1735560

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	10.0	T8	1	09/09/2021 11:00	WG1737192

Sample Narrative:

L1398565-03 WG1737192: 10.02 at 20.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	450		0.0852	0.500	1	09/08/2021 10:26	WG1734439
Cadmium	0.439	J	0.0471	0.500	1	09/08/2021 10:26	WG1734439
Nickel	12.4		0.132	2.00	1	09/08/2021 10:26	WG1734439
Selenium	2.78		0.764	2.00	1	09/08/2021 10:26	WG1734439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.36		0.100	1.00	5	09/06/2021 01:45	WG1734436

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	0.842		0.0217	0.100	1	09/10/2021 11:47	WG1735942
(S) a,a,a-Trifluorotoluene(FID)	85.7			77.0-120		09/10/2021 11:47	WG1735942

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	09/05/2021 00:46	WG1735178
Toluene	U		0.00130	0.00500	1	09/05/2021 00:46	WG1735178
Ethylbenzene	0.00125	J	0.000737	0.00250	1	09/05/2021 00:46	WG1735178
Xylenes, Total	0.0309		0.000880	0.00650	1	09/05/2021 00:46	WG1735178
1,2,4-Trimethylbenzene	0.00750		0.00158	0.00500	1	09/05/2021 00:46	WG1735178
1,3,5-Trimethylbenzene	0.00825		0.00200	0.00500	1	09/05/2021 00:46	WG1735178
(S) Toluene-d8	109			75.0-131		09/05/2021 00:46	WG1735178
(S) 4-Bromofluorobenzene	89.8			67.0-138		09/05/2021 00:46	WG1735178
(S) 1,2-Dichloroethane-d4	97.5			70.0-130		09/05/2021 00:46	WG1735178

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	32.6		1.61	4.00	1	09/10/2021 00:13	WG1736255
C28-C36 Motor Oil Range	137		0.274	4.00	1	09/10/2021 00:13	WG1736255

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	42.4			18.0-148		09/10/2021 00:13	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 21:59	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 21:59	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 21:59	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 21:59	WG1736874
(S) p-Terphenyl-d14	95.7			23.0-120		09/09/2021 21:59	WG1736874
(S) Nitrobenzene-d5	69.1			14.0-149		09/09/2021 21:59	WG1736874
(S) 2-Fluorobiphenyl	75.3			34.0-125		09/09/2021 21:59	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	39.4		1	09/08/2021 20:34	WG1734458

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 21:50	WG1735560

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	9.08	T8	1	09/09/2021 11:00	WG1737192

Sample Narrative:

L1398565-04 WG1737192: 9.08 at 20.5C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	310		0.0852	0.500	1	09/08/2021 10:29	WG1734439
Cadmium	0.416	J	0.0471	0.500	1	09/08/2021 10:29	WG1734439
Nickel	17.9		0.132	2.00	1	09/08/2021 10:29	WG1734439
Selenium	1.94	J	0.764	2.00	1	09/08/2021 10:29	WG1734439

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	11.8		0.100	1.00	5	09/06/2021 01:48	WG1734436

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	2.79		0.0217	0.100	1	09/10/2021 12:09	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	71.5	J2		77.0-120		09/10/2021 12:09	WG1735942

Sample Narrative:

L1398565-04 WG1735942: Surrogate failure due to matrix interference

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	0.000825	J	0.000467	0.00100	1	09/05/2021 01:06	WG1735178
Toluene	U		0.00130	0.00500	1	09/05/2021 01:06	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 01:06	WG1735178
Xylenes, Total	0.0181		0.000880	0.00650	1	09/05/2021 01:06	WG1735178
1,2,4-Trimethylbenzene	0.00370	J	0.00158	0.00500	1	09/05/2021 01:06	WG1735178
1,3,5-Trimethylbenzene	0.00418	J	0.00200	0.00500	1	09/05/2021 01:06	WG1735178
(S) <i>Toluene-d8</i>	102			75.0-131		09/05/2021 01:06	WG1735178
(S) <i>4</i> -Bromofluorobenzene	91.1			67.0-138		09/05/2021 01:06	WG1735178
(S) <i>1,2</i> -Dichloroethane-d4	100			70.0-130		09/05/2021 01:06	WG1735178

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	12.8		1.61	4.00	1	09/09/2021 23:32	WG1736255
C28-C36 Motor Oil Range	55.4		0.274	4.00	1	09/09/2021 23:32	WG1736255
(S) o-Terphenyl	48.3			18.0-148		09/09/2021 23:32	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 22:16	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 22:16	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 22:16	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 22:16	WG1736874
(S) p-Terphenyl-d14	83.9			23.0-120		09/09/2021 22:16	WG1736874
(S) Nitrobenzene-d5	66.8			14.0-149		09/09/2021 22:16	WG1736874
(S) 2-Fluorobiphenyl	69.1			34.0-125		09/09/2021 22:16	WG1736874

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	18.2		1	09/08/2021 20:37	WG1734458

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/09/2021 15:52	WG1736603

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.39	T8	1	09/09/2021 11:00	WG1737192

Sample Narrative:

L1398565-05 WG1737192: 8.39 at 20.5C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	238		0.0852	0.500	1	09/08/2021 10:32	WG1734439
Cadmium	0.326	J	0.0471	0.500	1	09/08/2021 10:32	WG1734439
Nickel	12.6		0.132	2.00	1	09/08/2021 10:32	WG1734439
Selenium	0.789	J	0.764	2.00	1	09/08/2021 10:32	WG1734439

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	8.69		0.100	1.00	5	09/06/2021 01:51	WG1734436

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

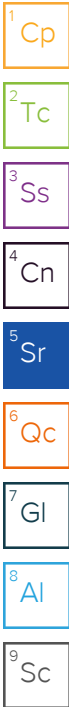
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	1.01		0.0217	0.100	1	09/10/2021 12:31	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.4			77.0-120		09/10/2021 12:31	WG1735942

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	0.00190		0.000467	0.00100	1	09/05/2021 01:25	WG1735178
Toluene	U		0.00130	0.00500	1	09/05/2021 01:25	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 01:25	WG1735178
Xylenes, Total	0.00393	J	0.000880	0.00650	1	09/05/2021 01:25	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 01:25	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 01:25	WG1735178
(S) Toluene-d8	107			75.0-131		09/05/2021 01:25	WG1735178
(S) 4-Bromofluorobenzene	90.8			67.0-138		09/05/2021 01:25	WG1735178
(S) 1,2-Dichloroethane-d4	92.2			70.0-130		09/05/2021 01:25	WG1735178

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	4.19		1.61	4.00	1	09/09/2021 22:38	WG1736255
C28-C36 Motor Oil Range	16.3		0.274	4.00	1	09/09/2021 22:38	WG1736255



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	45.9			18.0-148		09/09/2021 22:38	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 19:00	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 19:00	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 19:00	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 19:00	WG1736874
(S) p-Terphenyl-d14	85.2			23.0-120		09/09/2021 19:00	WG1736874
(S) Nitrobenzene-d5	61.7			14.0-149		09/09/2021 19:00	WG1736874
(S) 2-Fluorobiphenyl	69.0			34.0-125		09/09/2021 19:00	WG1736874

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.70		1	09/08/2021 20:40	WG1734458

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	09/09/2021 15:57	WG1736603

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.34	T8	1	09/09/2021 11:00	WG1737192

Sample Narrative:

L1398565-06 WG1737192: 8.34 at 20.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	272		0.0852	0.500	1	09/08/2021 10:35	WG1734439
Cadmium	0.376	J	0.0471	0.500	1	09/08/2021 10:35	WG1734439
Nickel	20.0		0.132	2.00	1	09/08/2021 10:35	WG1734439
Selenium	2.43		0.764	2.00	1	09/08/2021 10:35	WG1734439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.87		0.100	1.00	5	09/06/2021 01:55	WG1734436

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	0.144		0.0217	0.100	1	09/10/2021 08:27	WG1735945
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.5			77.0-120		09/10/2021 08:27	WG1735945

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	09/05/2021 01:44	WG1735178
Toluene	U		0.00130	0.00500	1	09/05/2021 01:44	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 01:44	WG1735178
Xylenes, Total	0.00500	J	0.000880	0.00650	1	09/05/2021 01:44	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 01:44	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 01:44	WG1735178
(S) Toluene-d8	107			75.0-131		09/05/2021 01:44	WG1735178
(S) 4-Bromofluorobenzene	88.6			67.0-138		09/05/2021 01:44	WG1735178
(S) 1,2-Dichloroethane-d4	92.8			70.0-130		09/05/2021 01:44	WG1735178



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	68.3		1.61	4.00	1	09/10/2021 00:40	WG1736255
C28-C36 Motor Oil Range	187		0.548	8.00	2	09/10/2021 11:48	WG1736255
(S) o-Terphenyl	58.5			18.0-148		09/10/2021 11:48	WG1736255
(S) o-Terphenyl	53.3			18.0-148		09/10/2021 00:40	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 22:34	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 22:34	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 22:34	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 22:34	WG1736874
(S) p-Terphenyl-d14	87.9			23.0-120		09/09/2021 22:34	WG1736874
(S) Nitrobenzene-d5	66.5			14.0-149		09/09/2021 22:34	WG1736874
(S) 2-Fluorobiphenyl	73.1			34.0-125		09/09/2021 22:34	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702330-1 09/08/21 18:58

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

L1398441-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398441-01 09/08/21 20:22 • (DUP) R3702330-7 09/08/21 20:27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	1.24	1.25	1	1.29		20

L1398562-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1398562-04 09/08/21 21:19 • (DUP) R3702330-8 09/08/21 21:24

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

Laboratory Control Sample (LCS)

(LCS) R3702330-2 09/08/21 19:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.62	96.2	80.0-120	

L1398402-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398402-01 09/08/21 19:45 • (MS) R3702330-3 09/08/21 19:50 • (MSD) R3702330-4 09/08/21 19:56

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	16.7	16.2	83.7	80.9	1	75.0-125			3.50	20

L1398402-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398402-01 09/08/21 19:45 • (MS) R3702330-5 09/08/21 20:11

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	648	U	586	90.5	50	75.0-125	



Method Blank (MB)

(MB) R3702552-1 09/09/21 15:31

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

L1398561-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398561-01 09/09/21 15:41 • (DUP) R3702552-3 09/09/21 15:47

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

L1399514-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1399514-03 09/09/21 17:51 • (DUP) R3702552-8 09/09/21 17:56

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	0.468	0.465	1	0.746	⬇	20

Laboratory Control Sample (LCS)

(LCS) R3702552-2 09/09/21 15:36

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.34	93.4	80.0-120	

L1398972-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398972-08 09/09/21 16:12 • (MS) R3702552-4 09/09/21 16:18 • (MSD) R3702552-5 09/09/21 16:33

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	1.02	19.1	19.6	90.6	93.1	1	75.0-125			2.55	20

L1398972-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398972-08 09/09/21 16:12 • (MS) R3702552-6 09/09/21 16:38

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	651	1.02	624	95.8	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1398565-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1398565-04 09/09/21 11:00 • (DUP) R3702212-3 09/09/21 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	9.08	9.05	1	0.331		1

Sample Narrative:

OS: 9.08 at 20.5C

DUP: 9.05 at 20.7C

Laboratory Control Sample (LCS)

(LCS) R3702212-1 09/09/21 11:00

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

Sample Narrative:

LCS: 10.04 at 21C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3701947-1 09/08/21 09:13

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3701947-2 09/08/21 09:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	104	104	80.0-120	
Cadmium	100	97.9	97.9	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	100	100	80.0-120	

L1397415-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397415-01 09/08/21 09:18 • (MS) R3701947-5 09/08/21 09:26 • (MSD) R3701947-6 09/08/21 09:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	11.3	112	109	101	97.8	1	75.0-125			2.91	20
Cadmium	100	0.192	103	100	103	99.9	1	75.0-125			3.13	20
Nickel	100	31.2	139	135	108	104	1	75.0-125			3.25	20
Selenium	100	5.23	67.6	60.5	62.4	55.3	1	75.0-125	J6	J6	11.0	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3700730-1 09/06/21 00:15

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

Laboratory Control Sample (LCS)

(LCS) R3700730-2 09/06/21 00:18

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.3	93.3	80.0-120	

L1397415-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397415-01 09/06/21 00:22 • (MS) R3700730-5 09/06/21 00:32 • (MSD) R3700730-6 09/06/21 00:35

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	0.850	73.4	70.3	72.5	69.5	5	75.0-125	J6	J6	4.24	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701520-3 09/07/21 09:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	91.9			77.0-120

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

(LCS) R3701520-1 09/07/21 07:59 • (LCSD) R3701520-2 09/07/21 08:22

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	5.51	5.04	100	91.6	72.0-127			8.91	20
(S) a,a,a-Trifluorotoluene(FID)				112	110	77.0-120				

L1398565-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398565-01 09/07/21 18:35 • (MS) R3701520-4 09/07/21 19:41 • (MSD) R3701520-5 09/07/21 20:03

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	550	374	710	738	61.1	66.2	100	10.0-151			3.87	28
(S) a,a,a-Trifluorotoluene(FID)					101	102		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702708-2 09/10/21 04:56

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)	96.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3702708-1 09/10/21 03:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.02	109	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3702722-2 09/10/21 06:05

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)	98.3			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3702722-1 09/10/21 04:27

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)			96.1	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702155-3 09/04/21 21:56

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	106			75.0-131
(S) 4-Bromofluorobenzene	91.2			67.0-138
(S) 1,2-Dichloroethane-d4	97.4			70.0-130

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

(LCS) R3702155-1 09/04/21 20:41 • (LCSD) R3702155-2 09/04/21 20:59

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	0.111	0.118	88.8	94.4	70.0-123			6.11	20
Ethylbenzene	0.125	0.106	0.113	84.8	90.4	74.0-126			6.39	20
Toluene	0.125	0.110	0.116	88.0	92.8	75.0-121			5.31	20
1,2,4-Trimethylbenzene	0.125	0.102	0.112	81.6	89.6	70.0-126			9.35	20
1,3,5-Trimethylbenzene	0.125	0.108	0.116	86.4	92.8	73.0-127			7.14	20
Xylenes, Total	0.375	0.301	0.324	80.3	86.4	72.0-127			7.36	20
(S) Toluene-d8				102	100	75.0-131				
(S) 4-Bromofluorobenzene				92.4	92.8	67.0-138				
(S) 1,2-Dichloroethane-d4				91.3	94.4	70.0-130				

L1398382-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398382-01 09/04/21 22:15 • (MS) R3702155-4 09/05/21 04:34 • (MSD) R3702155-5 09/05/21 04:53

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 %
Benzene	0.124	U	0.128	0.138	103	111	1	10.0-149			7.52	37
Ethylbenzene	0.124	U	0.132	0.134	106	108	1	10.0-160			1.50	38
Toluene	0.124	U	0.142	0.141	115	114	1	10.0-156			0.707	38
1,2,4-Trimethylbenzene	0.124	U	0.130	0.127	105	102	1	10.0-160			2.33	36
1,3,5-Trimethylbenzene	0.124	U	0.143	0.135	115	109	1	10.0-160			5.76	38
Xylenes, Total	0.372	U	0.375	0.380	101	102	1	10.0-160			1.32	38
(S) Toluene-d8					105	103		75.0-131				
(S) 4-Bromofluorobenzene					93.2	94.9		67.0-138				
(S) 1,2-Dichloroethane-d4					91.6	85.6		70.0-130				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3702599-1 09/09/21 19:55

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	52.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3702599-2 09/09/21 20:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.9	71.8	50.0-150	
(S) o-Terphenyl			54.8	18.0-148	

L1398398-17 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398398-17 09/09/21 21:16 • (MS) R3702599-3 09/09/21 21:30 • (MSD) R3702599-4 09/09/21 21:43

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	U	31.1	32.5	62.2	65.0	1	50.0-150			4.40	20
(S) o-Terphenyl					46.7	49.2		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702721-2 09/09/21 18:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	69.1			14.0-149
(S) 2-Fluorobiphenyl	79.0			34.0-125
(S) p-Terphenyl-d14	95.3			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3702721-1 09/09/21 18:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0680	85.0	49.0-120	
Naphthalene	0.0800	0.0645	80.6	50.0-120	
1-Methylnaphthalene	0.0800	0.0673	84.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0654	81.8	50.0-120	
(S) Nitrobenzene-d5			80.7	14.0-149	
(S) 2-Fluorobiphenyl			83.7	34.0-125	
(S) p-Terphenyl-d14			103	23.0-120	

L1398565-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398565-05 09/09/21 19:00 • (MS) R3702721-3 09/09/21 19:18 • (MSD) R3702721-4 09/09/21 19:35

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 %
Fluorene	0.0776	U	0.0769	0.0693	99.1	87.5	1	11.0-130			10.4	29
Naphthalene	0.0776	U	0.0723	0.0668	93.2	84.3	1	10.0-135			7.91	27
1-Methylnaphthalene	0.0776	U	0.0765	0.0720	98.6	90.9	1	10.0-142			6.06	28
2-Methylnaphthalene	0.0776	U	0.0732	0.0673	94.3	85.0	1	10.0-137			8.40	28
(S) Nitrobenzene-d5					86.0	80.8		14.0-149				
(S) 2-Fluorobiphenyl					98.4	87.5		34.0-125				
(S) p-Terphenyl-d14					120	103		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

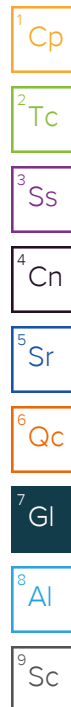
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower 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.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122



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

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

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

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



Caerus Oil & Gas LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606				Billing Information:				Pres Chk		Analysis / Container / Preservative								Chain of Custody Page 1 of 1					
				Same as above																			
Report to: bmiddleton@caerusoilandgas.com				Email To: bmiddleton@caerusoilandgas.com				<div style="text-align: right;">  Pace Analytical® <small>National Center for Testing & Innovation</small> </div> <div style="text-align: right;"> 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859 </div> <div style="text-align: right;">  </div> <div style="text-align: right;"> L# U398565 F239 </div> <div style="text-align: right;"> Acctnum: Template: Prelogin: TSR: PB: Shipped Via: </div>															
Project Description: J17E Dumpline Release				City/State Collected: Mamm Creek, CO																			
Phone:		Client Project #		Lab Project #																			
Fax:		J17E		J17E																			
Collected by (print):		Site/Facility ID #		P.O. #																			
Collected by (signature):		Rush? (Lab MUST Be Notified)		Quote #																			
Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>		<input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Date Results Needed		No. of Cntrs																	
				Standard TAT																			
Sample ID		Comp/Grab Matrix *		Depth		Date		Time		TPH- GRO, DRO, ORO		BTEX, pH, SAR		1,2,4-trimethylbenzene		1,3,5-trimethylbenzene		arsenic, cadmium, barium, chromium VI		flourene, naphthalene, nickel, selenium		1-methylbenzene, 2-methylbenzene	
20210831- J17E (MW08)		X SS				8/31/21		1140		2		X		X		X		X		X		X	
C 20-21.5'																							
20210831- J17E (MW08)		X SS				8/31/21		1155		2													
C 30-31.5'																							
20210831- J17E (MW08)		X SS				8/31/21		1305		2													
C 40-41.5'																							
20210831- J17E (MW08)		X SS				8/31/21		1330		2													
C 50-52'																							
20210831- J17E (MW08)		X SS				8/31/21		1405		2													
C 60-62'																							
* Matrix:		Remarks:																					
SS - Soil AIR - Air F - Filter		Analyze under Protection of Groundwater Soil Screening Level Concentrations		pH _____ Temp _____																			
GW - Groundwater B - Bioassay		Risk Based (R) and MCL Based (M) for all soil samples.																					
WW - WasteWater		Samples returned via:		Flow _____ Other _____																			
DW - Drinking Water		____ UPS ____ FedEx ____ Courier _____		Tracking # 5016 123 2 2985																			
OT - Other _____																							
Relinquished by: (Signature)		Date:		Time:		Received by: (Signature)		Trip Blank Received: Yes / No															
		8/31/21		1750				HCL / MeOH TBR															
Relinquished by: (Signature)		Date:		Time:		Received by: (Signature)		Temp: °C		Bottles Received:		If preservation required by Login: Date/Time											
		9/1/21		1500				5.6/5.6															
Relinquished by: (Signature)		Date:		Time:		Received for lab by: (Signature)		Date:		Time:		Hold:		Condition: NCF / OK									
								9/2/21		0915													

Billing Information:

Same as above

Email To:
bmiddleton@caerusoilandgas.com

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

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

Client Project #	Lab Project #
J17E	J17E

Site/Facility ID # J17E	P.O. # J17E
Rush? (Lab MUST Be Notified)	Quote #

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

Date Results Needed


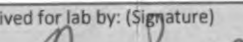
Standard TAT

Comp/Grab	Matrix *	Depth	Date	Time	Cntrs
-----------	----------	-------	------	------	-------

Grab	SS	8/31/21	1440	2
------	----	---------	------	---

Remarks: **Analyze under Protection of Groundwater Soil Screening Level Concentrations Risk Based (R) and MCL Based (M) for all soil samples.** pH _____ Temp _____
Flow _____ Other _____

Samples returned via: _____ Tracking # _____
UPS FedEx Courier

Date:	8/3/21	Time:	1750	Received by: (Signature)		Trip Blank Received: Yes/No	Yes
						HCL/Meol	
						TBR	
Date:	9/1/21	Time:	1800	Received by: (Signature)		Temp: ^{°C}	Bottles Received
						5.84025	6
Date:		Time:		Received for lab by: (Signature)		Date:	9/2
						Time:	0915

Chain of Custody Page 2 of 2

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

Table #

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via: _____

Remarks	Sample # (lab only)
---------	---------------------

Sample Receipt Checklist

Real Present/Intact:	<u>Y</u>	<u>NP</u>	<u>Y</u>	<u>N</u>
Signed/Accurate:	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>
es arrive intact:	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>
ct bottles used:	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>
cient volume sent:	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>
<u>If Applicable</u>				
ero Headspace:	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>
rvation Correct/Checked:	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>

October 26, 2021

Revised Report

Caerus Oil and Gas

Sample Delivery Group: L1398562
Samples Received: 09/02/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Entire Report Reviewed By:



Chris Ward
Project Manager

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

Pace Analytical National

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

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20210830-J17E (MW09) @ 20-22' L1398562-01 Solid

Collected by
Parker Coit

Collected date/time
08/30/21 11:55

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:07	09/08/21 20:07	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 20:53	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:00	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:15	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 09:35	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/04/21 22:53	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/10/21 11:34	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 19:53	AAT	Mt. Juliet, TN



20210830-J17E (MW09) @ 30-32' L1398562-02 Solid

Collected by
Parker Coit

Collected date/time
08/30/21 12:09

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:10	09/08/21 20:10	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 20:58	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:03	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:18	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 09:57	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/04/21 23:12	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/09/21 22:11	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 20:11	AAT	Mt. Juliet, TN

20210830-J17E (MW09) @ 45-47' L1398562-03 Solid

Collected by
Parker Coit

Collected date/time
08/30/21 12:57

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:13	09/08/21 20:13	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:13	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735544	1	09/05/21 16:00	09/05/21 23:34	CRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:06	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:22	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 10:19	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/04/21 23:30	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/09/21 23:46	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 20:28	AAT	Mt. Juliet, TN

20210830-J17E (MW09) @ 55-57' L1398562-04 Solid

Collected by
Parker Coit

Collected date/time
08/30/21 13:30

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:16	09/08/21 20:16	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:19	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:09	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:32	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 10:41	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/04/21 23:49	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/10/21 11:21	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 20:48	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20210830-J17E (MW09) @ 65-67' L1398562-05 Solid

Collected by
Parker Coit

Collected date/time
08/30/21 13:57

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734458	1	09/08/21 20:18	09/08/21 20:18	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735560	1	09/06/21 09:51	09/08/21 21:29	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735396	1	09/05/21 11:00	09/05/21 13:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1734439	1	09/03/21 09:41	09/08/21 10:12	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1734436	5	09/03/21 09:45	09/06/21 01:35	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735942	1	09/03/21 19:07	09/10/21 11:03	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735178	1	09/03/21 19:07	09/05/21 00:08	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1736255	1	09/08/21 09:30	09/09/21 23:59	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1736874	1	09/09/21 10:44	09/09/21 21:05	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



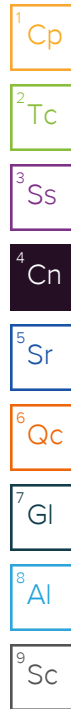
Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 09/13/21 12:13

Project Narrative

Revised to include As comment on -02



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.88		1	09/08/2021 20:07	WG1734458

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 20:53	WG1735560

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.47	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1398562-01 WG1735396: 8.47 at 20.5C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	207		0.0852	0.500	1	09/08/2021 10:00	WG1734439
Cadmium	0.554		0.0471	0.500	1	09/08/2021 10:00	WG1734439
Nickel	18.5		0.132	2.00	1	09/08/2021 10:00	WG1734439
Selenium	1.05	J	0.764	2.00	1	09/08/2021 10:00	WG1734439

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	9.51		0.100	1.00	5	09/06/2021 01:15	WG1734436

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.116		0.0217	0.100	1	09/10/2021 09:35	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.5			77.0-120		09/10/2021 09:35	WG1735942

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100	1	09/04/2021 22:53	WG1735178
Toluene	U		0.00130	0.00500	1	09/04/2021 22:53	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/04/2021 22:53	WG1735178
Xylenes, Total	U		0.000880	0.00650	1	09/04/2021 22:53	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/04/2021 22:53	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/04/2021 22:53	WG1735178
(S) Toluene-d8	109			75.0-131		09/04/2021 22:53	WG1735178
(S) 4-Bromofluorobenzene	86.3			67.0-138		09/04/2021 22:53	WG1735178
(S) 1,2-Dichloroethane-d4	88.8			70.0-130		09/04/2021 22:53	WG1735178

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	5.17		1.61	4.00	1	09/10/2021 11:34	WG1736255
C28-C36 Motor Oil Range	15.3		0.274	4.00	1	09/10/2021 11:34	WG1736255

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	46.1			18.0-148		09/10/2021 11:34	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 19:53	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 19:53	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 19:53	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 19:53	WG1736874
(S) p-Terphenyl-d14	84.7			23.0-120		09/09/2021 19:53	WG1736874
(S) Nitrobenzene-d5	50.1			14.0-149		09/09/2021 19:53	WG1736874
(S) 2-Fluorobiphenyl	62.6			34.0-125		09/09/2021 19:53	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.23		1	09/08/2021 20:10	WG1734458

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	09/08/2021 20:58	WG1735560

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.48	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1398562-02 WG1735396: 8.48 at 20.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	231		0.0852	0.500	1	09/08/2021 10:03	WG1734439
Cadmium	0.613		0.0471	0.500	1	09/08/2021 10:03	WG1734439
Nickel	15.8		0.132	2.00	1	09/08/2021 10:03	WG1734439
Selenium	1.61	J	0.764	2.00	1	09/08/2021 10:03	WG1734439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	104		0.100	1.00	5	09/06/2021 01:18	WG1734436

Sample Narrative:

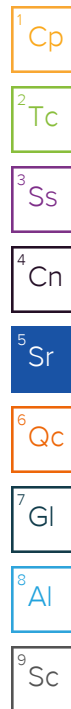
L1398562-02 WG1734436: ICP Arsenic run confirms at 116mg/kg

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	0.135		0.0217	0.100	1	09/10/2021 09:57	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.0			77.0-120		09/10/2021 09:57	WG1735942

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	09/04/2021 23:12	WG1735178
Toluene	U		0.00130	0.00500	1	09/04/2021 23:12	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/04/2021 23:12	WG1735178
Xylenes, Total	U		0.000880	0.00650	1	09/04/2021 23:12	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/04/2021 23:12	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/04/2021 23:12	WG1735178
(S) Toluene-d8	107			75.0-131		09/04/2021 23:12	WG1735178
(S) 4-Bromofluorobenzene	89.1			67.0-138		09/04/2021 23:12	WG1735178
(S) 1,2-Dichloroethane-d4	98.4			70.0-130		09/04/2021 23:12	WG1735178



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	6.10		1.61	4.00	1	09/09/2021 22:11	WG1736255
C28-C36 Motor Oil Range	15.4		0.274	4.00	1	09/09/2021 22:11	WG1736255
(S) o-Terphenyl	45.9			18.0-148		09/09/2021 22:11	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 20:11	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 20:11	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 20:11	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 20:11	WG1736874
(S) p-Terphenyl-d14	91.9			23.0-120		09/09/2021 20:11	WG1736874
(S) Nitrobenzene-d5	53.3			14.0-149		09/09/2021 20:11	WG1736874
(S) 2-Fluorobiphenyl	66.2			34.0-125		09/09/2021 20:11	WG1736874

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	4.31		1	09/08/2021 20:13	WG1734458

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 21:13	WG1735560

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	8.85	T8	1	09/05/2021 23:34	WG1735544

Sample Narrative:

L1398562-03 WG1735544: 8.85 at 22.1C

Metals (ICP) by Method 6010B

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Barium	250		0.0852	0.500	1	09/08/2021 10:06	WG1734439
Cadmium	0.969		0.0471	0.500	1	09/08/2021 10:06	WG1734439
Nickel	20.9		0.132	2.00	1	09/08/2021 10:06	WG1734439
Selenium	3.96		0.764	2.00	1	09/08/2021 10:06	WG1734439

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	9.50		0.100	1.00	5	09/06/2021 01:22	WG1734436

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

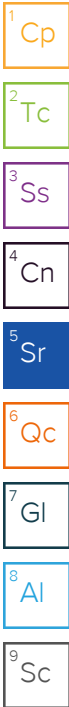
	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
TPH (GC/FID) Low Fraction	0.831		0.0217	0.100	1	09/10/2021 10:19	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	82.4			77.0-120		09/10/2021 10:19	WG1735942

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Benzene	U		0.000467	0.00100	1	09/04/2021 23:30	WG1735178
Toluene	U		0.00130	0.00500	1	09/04/2021 23:30	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/04/2021 23:30	WG1735178
Xylenes, Total	U		0.000880	0.00650	1	09/04/2021 23:30	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/04/2021 23:30	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/04/2021 23:30	WG1735178
(S) Toluene-d8	105			75.0-131		09/04/2021 23:30	WG1735178
(S) 4-Bromofluorobenzene	87.5			67.0-138		09/04/2021 23:30	WG1735178
(S) 1,2-Dichloroethane-d4	83.3			70.0-130		09/04/2021 23:30	WG1735178

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
C10-C28 Diesel Range	24.0		1.61	4.00	1	09/09/2021 23:46	WG1736255
C28-C36 Motor Oil Range	88.9		0.274	4.00	1	09/09/2021 23:46	WG1736255



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	40.4			18.0-148		09/09/2021 23:46	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 20:28	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 20:28	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 20:28	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 20:28	WG1736874
(S) p-Terphenyl-d14	96.3			23.0-120		09/09/2021 20:28	WG1736874
(S) Nitrobenzene-d5	58.8			14.0-149		09/09/2021 20:28	WG1736874
(S) 2-Fluorobiphenyl	72.4			34.0-125		09/09/2021 20:28	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	4.92		1	09/08/2021 20:16	WG1734458

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 21:19	WG1735560

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	8.79	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1398562-04 WG1735396: 8.79 at 20.4C

Metals (ICP) by Method 6010B

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Barium	252		0.0852	0.500	1	09/08/2021 10:09	WG1734439
Cadmium	0.428	J	0.0471	0.500	1	09/08/2021 10:09	WG1734439
Nickel	36.6		0.132	2.00	1	09/08/2021 10:09	WG1734439
Selenium	1.74	J	0.764	2.00	1	09/08/2021 10:09	WG1734439

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	10.6		0.100	1.00	5	09/06/2021 01:32	WG1734436

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
TPH (GC/FID) Low Fraction	0.161		0.0217	0.100	1	09/10/2021 10:41	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.2			77.0-120		09/10/2021 10:41	WG1735942

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Benzene	U		0.000467	0.00100	1	09/04/2021 23:49	WG1735178
Toluene	U		0.00130	0.00500	1	09/04/2021 23:49	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/04/2021 23:49	WG1735178
Xylenes, Total	U		0.000880	0.00650	1	09/04/2021 23:49	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/04/2021 23:49	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/04/2021 23:49	WG1735178
(S) Toluene-d8	101			75.0-131		09/04/2021 23:49	WG1735178
(S) 4-Bromofluorobenzene	91.3			67.0-138		09/04/2021 23:49	WG1735178
(S) 1,2-Dichloroethane-d4	79.4			70.0-130		09/04/2021 23:49	WG1735178

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

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
C10-C28 Diesel Range	2.40	J	1.61	4.00	1	09/10/2021 11:21	WG1736255
C28-C36 Motor Oil Range	8.91		0.274	4.00	1	09/10/2021 11:21	WG1736255

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	44.4			18.0-148		09/10/2021 11:21	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 20:48	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 20:48	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 20:48	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 20:48	WG1736874
(S) p-Terphenyl-d14	70.6			23.0-120		09/09/2021 20:48	WG1736874
(S) Nitrobenzene-d5	44.9			14.0-149		09/09/2021 20:48	WG1736874
(S) 2-Fluorobiphenyl	52.6			34.0-125		09/09/2021 20:48	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	2.91		1	09/08/2021 20:18	WG1734458

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 21:29	WG1735560

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.54	T8	1	09/05/2021 13:00	WG1735396

Sample Narrative:

L1398562-05 WG1735396: 8.54 at 20.4C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	304		0.0852	0.500	1	09/08/2021 10:12	WG1734439
Cadmium	0.471	J	0.0471	0.500	1	09/08/2021 10:12	WG1734439
Nickel	17.1		0.132	2.00	1	09/08/2021 10:12	WG1734439
Selenium	2.86		0.764	2.00	1	09/08/2021 10:12	WG1734439

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	15.5		0.100	1.00	5	09/06/2021 01:35	WG1734436

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

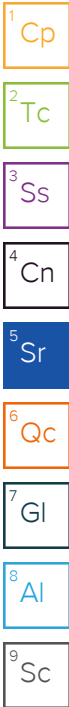
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0731	J	0.0217	0.100	1	09/10/2021 11:03	WG1735942
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.7			77.0-120		09/10/2021 11:03	WG1735942

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100	1	09/05/2021 00:08	WG1735178
Toluene	U		0.00130	0.00500	1	09/05/2021 00:08	WG1735178
Ethylbenzene	U		0.000737	0.00250	1	09/05/2021 00:08	WG1735178
Xylenes, Total	U		0.000880	0.00650	1	09/05/2021 00:08	WG1735178
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/05/2021 00:08	WG1735178
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/05/2021 00:08	WG1735178
(S) Toluene-d8	106			75.0-131		09/05/2021 00:08	WG1735178
(S) 4-Bromofluorobenzene	89.1			67.0-138		09/05/2021 00:08	WG1735178
(S) 1,2-Dichloroethane-d4	89.2			70.0-130		09/05/2021 00:08	WG1735178

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	53.7		1.61	4.00	1	09/09/2021 23:59	WG1736255
C28-C36 Motor Oil Range	156		0.274	4.00	1	09/09/2021 23:59	WG1736255



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	51.9			18.0-148		09/09/2021 23:59	WG1736255

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
Fluorene	U		0.00205	0.00600	1	09/09/2021 21:05	WG1736874
Naphthalene	U		0.00408	0.0200	1	09/09/2021 21:05	WG1736874
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 21:05	WG1736874
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 21:05	WG1736874
(S) p-Terphenyl-d14	96.4			23.0-120		09/09/2021 21:05	WG1736874
(S) Nitrobenzene-d5	57.8			14.0-149		09/09/2021 21:05	WG1736874
(S) 2-Fluorobiphenyl	67.1			34.0-125		09/09/2021 21:05	WG1736874

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702330-1 09/08/21 18:58

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

L1398441-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398441-01 09/08/21 20:22 • (DUP) R3702330-7 09/08/21 20:27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	1.24	1.25	1	1.29		20

L1398562-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1398562-04 09/08/21 21:19 • (DUP) R3702330-8 09/08/21 21:24

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

Laboratory Control Sample (LCS)

(LCS) R3702330-2 09/08/21 19:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.62	96.2	80.0-120	

L1398402-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398402-01 09/08/21 19:45 • (MS) R3702330-3 09/08/21 19:50 • (MSD) R3702330-4 09/08/21 19:56

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	16.7	16.2	83.7	80.9	1	75.0-125			3.50	20

L1398402-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398402-01 09/08/21 19:45 • (MS) R3702330-5 09/08/21 20:11

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	648	U	586	90.5	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1398387-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398387-01 09/05/21 13:00 • (DUP) R3700581-2 09/05/21 13:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.36	8.39	1	0.358		1

Sample Narrative:

OS: 8.36 at 20.9C

DUP: 8.39 at 20.9C

L1398402-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398402-01 09/05/21 13:00 • (DUP) R3700581-3 09/05/21 13:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.65	8.66	1	0.116		1

Sample Narrative:

OS: 8.65 at 20.6C

DUP: 8.66 at 20.6C

Laboratory Control Sample (LCS)

(LCS) R3700581-1 09/05/21 13:00

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

Sample Narrative:

LCS: 10.06 at 20.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1396531-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1396531-04 09/05/21 23:34 • (DUP) R3700642-2 09/05/21 23:34

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.50	7.48	1	0.267		1

Sample Narrative:

OS: 7.5 at 22C
DUP: 7.48 at 22.6C



L1398562-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398562-03 09/05/21 23:34 • (DUP) R3700642-3 09/05/21 23:34

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.85	8.87	1	0.226		1

Sample Narrative:

OS: 8.85 at 22.1C
DUP: 8.87 at 21.8C

Laboratory Control Sample (LCS)

(LCS) R3700642-1 09/05/21 23:34

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

Sample Narrative:

LCS: 10.05 at 21.3C

Method Blank (MB)

(MB) R3701947-1 09/08/21 09:13

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3701947-2 09/08/21 09:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	104	104	80.0-120	
Cadmium	100	97.9	97.9	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	100	100	80.0-120	

L1397415-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397415-01 09/08/21 09:18 • (MS) R3701947-5 09/08/21 09:26 • (MSD) R3701947-6 09/08/21 09:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	11.3	112	109	101	97.8	1	75.0-125			2.91	20
Cadmium	100	0.192	103	100	103	99.9	1	75.0-125			3.13	20
Nickel	100	31.2	139	135	108	104	1	75.0-125			3.25	20
Selenium	100	5.23	67.6	60.5	62.4	55.3	1	75.0-125	J6	J6	11.0	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700730-1 09/06/21 00:15

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

Laboratory Control Sample (LCS)

(LCS) R3700730-2 09/06/21 00:18

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.3	93.3	80.0-120	

L1397415-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397415-01 09/06/21 00:22 • (MS) R3700730-5 09/06/21 00:32 • (MSD) R3700730-6 09/06/21 00:35

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	0.850	73.4	70.3	72.5	69.5	5	75.0-125	J6	J6	4.24	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702708-2 09/10/21 04:56

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)	96.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3702708-1 09/10/21 03:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.02	109	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3702155-3 09/04/21 21:56

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	106			75.0-131
(S) 4-Bromofluorobenzene	91.2			67.0-138
(S) 1,2-Dichloroethane-d4	97.4			70.0-130

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

(LCS) R3702155-1 09/04/21 20:41 • (LCSD) R3702155-2 09/04/21 20:59

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	0.111	0.118	88.8	94.4	70.0-123			6.11	20
Ethylbenzene	0.125	0.106	0.113	84.8	90.4	74.0-126			6.39	20
Toluene	0.125	0.110	0.116	88.0	92.8	75.0-121			5.31	20
1,2,4-Trimethylbenzene	0.125	0.102	0.112	81.6	89.6	70.0-126			9.35	20
1,3,5-Trimethylbenzene	0.125	0.108	0.116	86.4	92.8	73.0-127			7.14	20
Xylenes, Total	0.375	0.301	0.324	80.3	86.4	72.0-127			7.36	20
(S) Toluene-d8				102	100	75.0-131				
(S) 4-Bromofluorobenzene				92.4	92.8	67.0-138				
(S) 1,2-Dichloroethane-d4				91.3	94.4	70.0-130				

L1398382-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398382-01 09/04/21 22:15 • (MS) R3702155-4 09/05/21 04:34 • (MSD) R3702155-5 09/05/21 04:53

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 %
Benzene	0.124	U	0.128	0.138	103	111	1	10.0-149			7.52	37
Ethylbenzene	0.124	U	0.132	0.134	106	108	1	10.0-160			1.50	38
Toluene	0.124	U	0.142	0.141	115	114	1	10.0-156			0.707	38
1,2,4-Trimethylbenzene	0.124	U	0.130	0.127	105	102	1	10.0-160			2.33	36
1,3,5-Trimethylbenzene	0.124	U	0.143	0.135	115	109	1	10.0-160			5.76	38
Xylenes, Total	0.372	U	0.375	0.380	101	102	1	10.0-160			1.32	38
(S) Toluene-d8					105	103		75.0-131				
(S) 4-Bromofluorobenzene					93.2	94.9		67.0-138				
(S) 1,2-Dichloroethane-d4					91.6	85.6		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702599-1 09/09/21 19:55

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	52.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3702599-2 09/09/21 20:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.9	71.8	50.0-150	
(S) o-Terphenyl			54.8	18.0-148	

L1398398-17 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398398-17 09/09/21 21:16 • (MS) R3702599-3 09/09/21 21:30 • (MSD) R3702599-4 09/09/21 21:43

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	U	31.1	32.5	62.2	65.0	1	50.0-150			4.40	20
(S) o-Terphenyl					46.7	49.2		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702721-2 09/09/21 18:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	69.1			14.0-149
(S) 2-Fluorobiphenyl	79.0			34.0-125
(S) p-Terphenyl-d14	95.3			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3702721-1 09/09/21 18:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0680	85.0	49.0-120	
Naphthalene	0.0800	0.0645	80.6	50.0-120	
1-Methylnaphthalene	0.0800	0.0673	84.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0654	81.8	50.0-120	
(S) Nitrobenzene-d5			80.7	14.0-149	
(S) 2-Fluorobiphenyl			83.7	34.0-125	
(S) p-Terphenyl-d14			103	23.0-120	

L1398565-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398565-05 09/09/21 19:00 • (MS) R3702721-3 09/09/21 19:18 • (MSD) R3702721-4 09/09/21 19:35

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 %
Fluorene	0.0776	U	0.0769	0.0693	99.1	87.5	1	11.0-130			10.4	29
Naphthalene	0.0776	U	0.0723	0.0668	93.2	84.3	1	10.0-135			7.91	27
1-Methylnaphthalene	0.0776	U	0.0765	0.0720	98.6	90.9	1	10.0-142			6.06	28
2-Methylnaphthalene	0.0776	U	0.0732	0.0673	94.3	85.0	1	10.0-137			8.40	28
(S) Nitrobenzene-d5					86.0	80.8		14.0-149				
(S) 2-Fluorobiphenyl					98.4	87.5		34.0-125				
(S) p-Terphenyl-d14					120	103		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

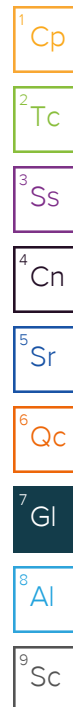
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Billing Information:

Same as above

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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

L# **U398562**
F238

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks Sample # (lab only)

Report to:
bmiddleton@caerusoilandgas.com

Email To:
bmiddleton@caerusoilandgas.com

Project
Description: J17E Dumpline Release

City/State
Collected: Mamm Creek, CO

Phone: (970) 658-7025
Fax:

Client Project #
J17E

Lab Project #
J17E

Collected by (print):
Parker Coit

Site/Facility ID #
J17E

P.O. #
J17E

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on Ice N ☐ Y ☒

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

Date Results Needed
Standard TAT

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	TPH- GRO, DRO, ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene				
20210830-J17E (MWO9) @ 20-22'	Grab	SS		08/30/21	1155	2	X	X	X	X	X	X	X				-01
20210830-J17E (MWO9) @ 30-32'	Grab	SS			1209	2	X	X	X	X	X	X	X				-02
20210830-J17E (MWO9) @ 45-47'	Grab	SS			1257	2	X	X	X	X	X	X	X				-03
20210830-J17E (MWO9) @ 55-57'	Grab	SS			1330	2	X	X	X	X	X	X	X				-04
20210830-J17E (MWO9) @ 65-67'	Grab	SS			1357	2	X	X	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:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

pH Temp

Flow Other

Samples returned via:

UPS FedEx Courier

Tracking #

SOIL 1232 2985

Received by: (Signature)

91

Trip Blank Received: Yes (No)

HCL / MeOH
TBR

Received by: (Signature)

Temp: 5.6/05.6 °C Bottles Received: 10

Received for lab by: (Signature)

M. Smith

Date: 9/2/21 Time: 0915

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

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / OK

Relinquished by: (Signature)

Date: 8/30/21

Time: 1700

Relinquished by: (Signature)

Date: 8/1/21

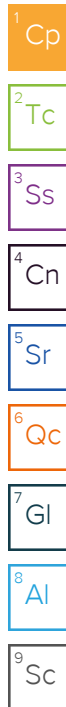
Time: 1500

Relinquished by: (Signature)

Date:

Time:


September 17, 2021



Caerus Oil and Gas

Sample Delivery Group: L1400494
Samples Received: 09/08/2021
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

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

Pace Analytical National

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

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SAMPLE SUMMARY

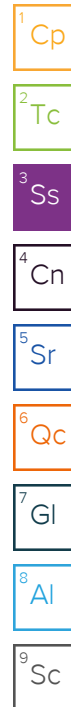
20210902-J17E(MW10)@5-7' L1400494-01 Solid

Collected by
DH

Collected date/time
09/02/21 11:10

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:04	09/14/21 18:04	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739053	1	09/13/21 00:46	09/13/21 19:14	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738412	1	09/10/21 16:31	09/10/21 20:10	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 19:43	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:25	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/11/21 22:48	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 19:46	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	1	09/13/21 07:31	09/13/21 16:08	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/10/21 22:58	AMG	Mt. Juliet, TN



20210902-J17E(MW10)@15-17' L1400494-02 Solid

Collected by
DH

Collected date/time
09/02/21 11:35

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:07	09/14/21 18:07	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739053	1	09/13/21 00:46	09/13/21 19:19	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738412	1	09/10/21 16:31	09/10/21 20:10	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 19:27	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:08	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/11/21 23:12	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 20:04	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	5	09/13/21 07:31	09/13/21 22:57	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/10/21 23:18	AMG	Mt. Juliet, TN

20210902-J17E(MW10)@25-27' L1400494-03 Solid

Collected by
DH

Collected date/time
09/02/21 12:00

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:10	09/14/21 18:10	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739053	1	09/13/21 00:46	09/13/21 19:25	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738412	1	09/10/21 16:31	09/10/21 20:10	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 19:46	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:28	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/11/21 23:35	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 20:23	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	10	09/13/21 07:31	09/14/21 00:18	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/10/21 23:38	AMG	Mt. Juliet, TN

20210902-J17E(MW10)@35-37' L1400494-04 Solid

Collected by
DH

Collected date/time
09/02/21 13:00

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:13	09/14/21 18:13	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739053	1	09/13/21 00:46	09/13/21 19:35	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738412	1	09/10/21 16:31	09/10/21 20:10	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 19:50	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:32	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/11/21 23:59	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 20:42	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	1	09/13/21 07:31	09/13/21 21:58	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/10/21 23:58	AMG	Mt. Juliet, TN

SAMPLE SUMMARY

20210902-J17E(MW10)@45-47' L1400494-05 Solid

Collected by
DH

Collected date/time
09/02/21 13:30

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:16	09/14/21 18:16	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739053	1	09/13/21 00:46	09/13/21 19:40	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738412	1	09/10/21 16:31	09/10/21 20:10	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 19:58	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:42	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/12/21 00:22	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 21:01	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	1	09/13/21 07:31	09/13/21 15:54	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/11/21 00:18	AMG	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

20210902-J17E(MW10)@55-56.5' L1400494-06 Solid

Collected by
DH

Collected date/time
09/02/21 14:00

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:19	09/14/21 18:19	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739053	1	09/13/21 00:46	09/13/21 19:45	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:02	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:45	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/12/21 00:46	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 21:20	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	5	09/13/21 07:31	09/13/21 23:10	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/11/21 00:38	AMG	Mt. Juliet, TN

⁷Gl

⁸Al

⁹Sc

20210902-J17E(MW10)@65-66.3' L1400494-07 Solid

Collected by
DH

Collected date/time
09/02/21 14:50

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737269	1	09/14/21 18:22	09/14/21 18:22	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 13:24	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:05	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:48	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738084	1	09/09/21 16:29	09/12/21 01:10	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 16:29	09/10/21 21:39	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	5	09/13/21 07:31	09/13/21 23:37	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1738032	1	09/10/21 17:52	09/11/21 00:58	AMG	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.688		1	09/14/2021 18:04	WG1737269

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	09/13/2021 19:14	WG1739053

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.46	T8	1	09/10/2021 20:10	WG1738412

Sample Narrative:

L1400494-01 WG1738412: 8.46 at 21.4C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	303		0.0852	0.500	1	09/13/2021 19:43	WG1738000
Cadmium	0.324	J	0.0471	0.500	1	09/13/2021 19:43	WG1738000
Nickel	11.2		0.132	2.00	1	09/13/2021 19:43	WG1738000
Selenium	0.927	J	0.764	2.00	1	09/13/2021 19:43	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.24		0.100	1.00	5	09/10/2021 20:25	WG1738008

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

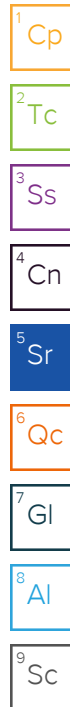
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.873		0.0217	0.100	1	09/11/2021 22:48	WG1738084
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.7			77.0-120		09/11/2021 22:48	WG1738084

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	0.00397		0.000467	0.00100	1	09/10/2021 19:46	WG1738107
Toluene	0.118		0.00130	0.00500	1	09/10/2021 19:46	WG1738107
Ethylbenzene	0.00560		0.000737	0.00250	1	09/10/2021 19:46	WG1738107
Xylenes, Total	0.0743		0.000880	0.00650	1	09/10/2021 19:46	WG1738107
1,2,4-Trimethylbenzene	0.00255	J	0.00158	0.00500	1	09/10/2021 19:46	WG1738107
1,3,5-Trimethylbenzene	0.00200	J	0.00200	0.00500	1	09/10/2021 19:46	WG1738107
(S) Toluene-d8	111			75.0-131		09/10/2021 19:46	WG1738107
(S) 4-Bromofluorobenzene	102			67.0-138		09/10/2021 19:46	WG1738107
(S) 1,2-Dichloroethane-d4	99.5			70.0-130		09/10/2021 19:46	WG1738107

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	4.76		1.61	4.00	1	09/13/2021 16:08	WG1738868
C28-C36 Motor Oil Range	26.8		0.274	4.00	1	09/13/2021 16:08	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	71.5			18.0-148		09/13/2021 16:08	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/10/2021 22:58	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/10/2021 22:58	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 22:58	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/10/2021 22:58	WG1738032
(S) p-Terphenyl-d14	73.4			23.0-120		09/10/2021 22:58	WG1738032
(S) Nitrobenzene-d5	56.7			14.0-149		09/10/2021 22:58	WG1738032
(S) 2-Fluorobiphenyl	62.4			34.0-125		09/10/2021 22:58	WG1738032

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.861		1	09/14/2021 18:07	WG1737269

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	09/13/2021 19:19	WG1739053

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.01	T8	1	09/10/2021 20:10	WG1738412

Sample Narrative:

L1400494-02 WG1738412: 9.01 at 21.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	238	J3 J5	0.0852	0.500	1	09/13/2021 19:27	WG1738000
Cadmium	0.414	J	0.0471	0.500	1	09/13/2021 19:27	WG1738000
Nickel	14.2		0.132	2.00	1	09/13/2021 19:27	WG1738000
Selenium	U		0.764	2.00	1	09/13/2021 19:27	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.6		0.100	1.00	5	09/10/2021 20:08	WG1738008

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	0.574		0.0217	0.100	1	09/11/2021 23:12	WG1738084
(S) a,a,a-Trifluorotoluene(FID)	95.8			77.0-120		09/11/2021 23:12	WG1738084

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	0.00728		0.000467	0.00100	1	09/10/2021 20:04	WG1738107
Toluene	0.140		0.00130	0.00500	1	09/10/2021 20:04	WG1738107
Ethylbenzene	0.00532		0.000737	0.00250	1	09/10/2021 20:04	WG1738107
Xylenes, Total	0.0642		0.000880	0.00650	1	09/10/2021 20:04	WG1738107
1,2,4-Trimethylbenzene	0.00208	J	0.00158	0.00500	1	09/10/2021 20:04	WG1738107
1,3,5-Trimethylbenzene	0.00223	J	0.00200	0.00500	1	09/10/2021 20:04	WG1738107
(S) Toluene-d8	110			75.0-131		09/10/2021 20:04	WG1738107
(S) 4-Bromofluorobenzene	103			67.0-138		09/10/2021 20:04	WG1738107
(S) 1,2-Dichloroethane-d4	95.6			70.0-130		09/10/2021 20:04	WG1738107

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	23.1		8.05	20.0	5	09/13/2021 22:57	WG1738868
C28-C36 Motor Oil Range	122		1.37	20.0	5	09/13/2021 22:57	WG1738868

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	77.7			18.0-148		09/13/2021 22:57	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/10/2021 23:18	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/10/2021 23:18	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 23:18	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/10/2021 23:18	WG1738032
(S) p-Terphenyl-d14	93.3			23.0-120		09/10/2021 23:18	WG1738032
(S) Nitrobenzene-d5	74.4			14.0-149		09/10/2021 23:18	WG1738032
(S) 2-Fluorobiphenyl	80.3			34.0-125		09/10/2021 23:18	WG1738032

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.16		1	09/14/2021 18:10	WG1737269

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	09/13/2021 19:25	WG1739053

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.19	T8	1	09/10/2021 20:10	WG1738412

Sample Narrative:

L1400494-03 WG1738412: 9.19 at 21.2C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	212		0.0852	0.500	1	09/13/2021 19:46	WG1738000
Cadmium	0.320	J	0.0471	0.500	1	09/13/2021 19:46	WG1738000
Nickel	27.3		0.132	2.00	1	09/13/2021 19:46	WG1738000
Selenium	1.33	J	0.764	2.00	1	09/13/2021 19:46	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.9		0.100	1.00	5	09/10/2021 20:28	WG1738008

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

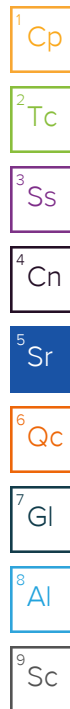
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.660		0.0217	0.100	1	09/11/2021 23:35	WG1738084
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.3			77.0-120		09/11/2021 23:35	WG1738084

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	0.00633		0.000467	0.00100	1	09/10/2021 20:23	WG1738107
Toluene	0.243		0.00130	0.00500	1	09/10/2021 20:23	WG1738107
Ethylbenzene	0.0123		0.000737	0.00250	1	09/10/2021 20:23	WG1738107
Xylenes, Total	0.144		0.000880	0.00650	1	09/10/2021 20:23	WG1738107
1,2,4-Trimethylbenzene	0.00353	J	0.00158	0.00500	1	09/10/2021 20:23	WG1738107
1,3,5-Trimethylbenzene	0.00340	J	0.00200	0.00500	1	09/10/2021 20:23	WG1738107
(S) Toluene-d8	111			75.0-131		09/10/2021 20:23	WG1738107
(S) 4-Bromofluorobenzene	102			67.0-138		09/10/2021 20:23	WG1738107
(S) 1,2-Dichloroethane-d4	97.2			70.0-130		09/10/2021 20:23	WG1738107

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	44.0		16.1	40.0	10	09/14/2021 00:18	WG1738868
C28-C36 Motor Oil Range	211		2.74	40.0	10	09/14/2021 00:18	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	75.7			18.0-148		09/14/2021 00:18	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/10/2021 23:38	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/10/2021 23:38	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 23:38	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/10/2021 23:38	WG1738032
(S) p-Terphenyl-d14	82.4			23.0-120		09/10/2021 23:38	WG1738032
(S) Nitrobenzene-d5	63.9			14.0-149		09/10/2021 23:38	WG1738032
(S) 2-Fluorobiphenyl	70.0			34.0-125		09/10/2021 23:38	WG1738032

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	4.58		1	09/14/2021 18:13	WG1737269

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/13/2021 19:35	WG1739053

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	9.07	T8	1	09/10/2021 20:10	WG1738412

Sample Narrative:

L1400494-04 WG1738412: 9.07 at 21C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	168		0.0852	0.500	1	09/13/2021 19:50	WG1738000
Cadmium	0.439	J	0.0471	0.500	1	09/13/2021 19:50	WG1738000
Nickel	17.2		0.132	2.00	1	09/13/2021 19:50	WG1738000
Selenium	U		0.764	2.00	1	09/13/2021 19:50	WG1738000

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	7.41		0.100	1.00	5	09/10/2021 20:32	WG1738008

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

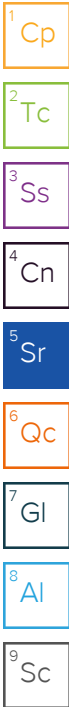
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.474		0.0217	0.100	1	09/11/2021 23:59	WG1738084
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.4			77.0-120		09/11/2021 23:59	WG1738084

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	0.00375		0.000467	0.00100	1	09/10/2021 20:42	WG1738107
Toluene	0.0636		0.00130	0.00500	1	09/10/2021 20:42	WG1738107
Ethylbenzene	0.00347		0.000737	0.00250	1	09/10/2021 20:42	WG1738107
Xylenes, Total	0.0394		0.000880	0.00650	1	09/10/2021 20:42	WG1738107
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/10/2021 20:42	WG1738107
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/10/2021 20:42	WG1738107
(S) <i>Toluene-d8</i>	112			75.0-131		09/10/2021 20:42	WG1738107
(S) <i>4</i> -Bromofluorobenzene	104			67.0-138		09/10/2021 20:42	WG1738107
(S) <i>1,2</i> -Dichloroethane- <i>d4</i>	101			70.0-130		09/10/2021 20:42	WG1738107

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	43.7		1.61	4.00	1	09/13/2021 21:58	WG1738868
C28-C36 Motor Oil Range	42.1		0.274	4.00	1	09/13/2021 21:58	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	56.5			18.0-148		09/13/2021 21:58	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/10/2021 23:58	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/10/2021 23:58	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 23:58	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/10/2021 23:58	WG1738032
(S) p-Terphenyl-d14	77.4			23.0-120		09/10/2021 23:58	WG1738032
(S) Nitrobenzene-d5	72.5			14.0-149		09/10/2021 23:58	WG1738032
(S) 2-Fluorobiphenyl	60.5			34.0-125		09/10/2021 23:58	WG1738032

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.24		1	09/14/2021 18:16	WG1737269

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	09/13/2021 19:40	WG1739053

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.00	T8	1	09/10/2021 20:10	WG1738412

Sample Narrative:

L1400494-05 WG1738412: 9 at 21C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	183		0.0852	0.500	1	09/13/2021 19:58	WG1738000
Cadmium	0.515		0.0471	0.500	1	09/13/2021 19:58	WG1738000
Nickel	11.9		0.132	2.00	1	09/13/2021 19:58	WG1738000
Selenium	1.42	J	0.764	2.00	1	09/13/2021 19:58	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.73		0.100	1.00	5	09/10/2021 20:42	WG1738008

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

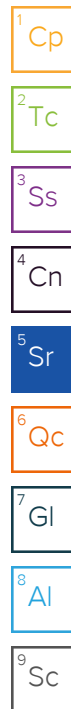
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.279		0.0217	0.100	1	09/12/2021 00:22	WG1738084
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.2			77.0-120		09/12/2021 00:22	WG1738084

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	0.00146		0.000467	0.00100	1	09/10/2021 21:01	WG1738107
Toluene	0.0165		0.00130	0.00500	1	09/10/2021 21:01	WG1738107
Ethylbenzene	0.000792	J	0.000737	0.00250	1	09/10/2021 21:01	WG1738107
Xylenes, Total	0.00920		0.000880	0.00650	1	09/10/2021 21:01	WG1738107
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/10/2021 21:01	WG1738107
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/10/2021 21:01	WG1738107
(S) Toluene-d8	113			75.0-131		09/10/2021 21:01	WG1738107
(S) 4-Bromofluorobenzene	103			67.0-138		09/10/2021 21:01	WG1738107
(S) 1,2-Dichloroethane-d4	84.9			70.0-130		09/10/2021 21:01	WG1738107

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	3.77	J	1.61	4.00	1	09/13/2021 15:54	WG1738868
C28-C36 Motor Oil Range	8.29	B	0.274	4.00	1	09/13/2021 15:54	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	69.6			18.0-148		09/13/2021 15:54	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/11/2021 00:18	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/11/2021 00:18	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/11/2021 00:18	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/11/2021 00:18	WG1738032
(S) p-Terphenyl-d14	54.1			23.0-120		09/11/2021 00:18	WG1738032
(S) Nitrobenzene-d5	66.9			14.0-149		09/11/2021 00:18	WG1738032
(S) 2-Fluorobiphenyl	46.4			34.0-125		09/11/2021 00:18	WG1738032

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.03		1	09/14/2021 18:19	WG1737269

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	09/13/2021 19:45	WG1739053

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.26	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400494-06 WG1738430: 9.26 at 23.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	313		0.0852	0.500	1	09/13/2021 20:02	WG1738000
Cadmium	0.322	J	0.0471	0.500	1	09/13/2021 20:02	WG1738000
Nickel	15.4		0.132	2.00	1	09/13/2021 20:02	WG1738000
Selenium	1.75	J	0.764	2.00	1	09/13/2021 20:02	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.2		0.100	1.00	5	09/10/2021 20:45	WG1738008

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

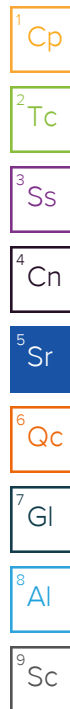
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.838		0.0217	0.100	1	09/12/2021 00:46	WG1738084
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.4			77.0-120		09/12/2021 00:46	WG1738084

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	0.0110		0.000467	0.00100	1	09/10/2021 21:20	WG1738107
Toluene	0.109		0.00130	0.00500	1	09/10/2021 21:20	WG1738107
Ethylbenzene	0.00365		0.000737	0.00250	1	09/10/2021 21:20	WG1738107
Xylenes, Total	0.0403		0.000880	0.00650	1	09/10/2021 21:20	WG1738107
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/10/2021 21:20	WG1738107
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/10/2021 21:20	WG1738107
(S) Toluene-d8	112			75.0-131		09/10/2021 21:20	WG1738107
(S) 4-Bromofluorobenzene	101			67.0-138		09/10/2021 21:20	WG1738107
(S) 1,2-Dichloroethane-d4	101			70.0-130		09/10/2021 21:20	WG1738107

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	49.3		8.05	20.0	5	09/13/2021 23:10	WG1738868
C28-C36 Motor Oil Range	222		1.37	20.0	5	09/13/2021 23:10	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	54.5			18.0-148		09/13/2021 23:10	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/11/2021 00:38	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/11/2021 00:38	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/11/2021 00:38	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/11/2021 00:38	WG1738032
(S) p-Terphenyl-d14	81.8			23.0-120		09/11/2021 00:38	WG1738032
(S) Nitrobenzene-d5	71.7			14.0-149		09/11/2021 00:38	WG1738032
(S) 2-Fluorobiphenyl	72.1			34.0-125		09/11/2021 00:38	WG1738032

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.79		1	09/14/2021 18:22	WG1737269

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	09/16/2021 13:24	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.90	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400494-07 WG1738430: 8.9 at 23.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	255		0.0852	0.500	1	09/13/2021 20:05	WG1738000
Cadmium	0.347	J	0.0471	0.500	1	09/13/2021 20:05	WG1738000
Nickel	14.5		0.132	2.00	1	09/13/2021 20:05	WG1738000
Selenium	1.05	J	0.764	2.00	1	09/13/2021 20:05	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.35		0.100	1.00	5	09/10/2021 20:48	WG1738008

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

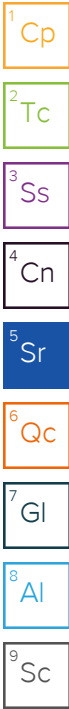
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.521		0.0217	0.100	1	09/12/2021 01:10	WG1738084
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.4			77.0-120		09/12/2021 01:10	WG1738084

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	0.0133		0.000467	0.00100	1	09/10/2021 21:39	WG1738107
Toluene	0.134		0.00130	0.00500	1	09/10/2021 21:39	WG1738107
Ethylbenzene	0.00411		0.000737	0.00250	1	09/10/2021 21:39	WG1738107
Xylenes, Total	0.0436		0.000880	0.00650	1	09/10/2021 21:39	WG1738107
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/10/2021 21:39	WG1738107
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/10/2021 21:39	WG1738107
(S) <i>Toluene-d8</i>	111			75.0-131		09/10/2021 21:39	WG1738107
(S) <i>4</i> -Bromofluorobenzene	104			67.0-138		09/10/2021 21:39	WG1738107
(S) <i>1,2</i> -Dichloroethane-d4	94.0			70.0-130		09/10/2021 21:39	WG1738107

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	63.7		8.05	20.0	5	09/13/2021 23:37	WG1738868
C28-C36 Motor Oil Range	249		1.37	20.0	5	09/13/2021 23:37	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	55.0			18.0-148		09/13/2021 23:37	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/11/2021 00:58	WG1738032
Naphthalene	U		0.00408	0.0200	1	09/11/2021 00:58	WG1738032
1-Methylnaphthalene	U		0.00449	0.0200	1	09/11/2021 00:58	WG1738032
2-Methylnaphthalene	U		0.00427	0.0200	1	09/11/2021 00:58	WG1738032
(S) p-Terphenyl-d14	63.9			23.0-120		09/11/2021 00:58	WG1738032
(S) Nitrobenzene-d5	60.0			14.0-149		09/11/2021 00:58	WG1738032
(S) 2-Fluorobiphenyl	54.6			34.0-125		09/11/2021 00:58	WG1738032

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704153-1 09/13/21 16:13

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

L1400478-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1400478-04 09/13/21 18:33 • (DUP) R3704153-7 09/13/21 18:38

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

L1400494-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1400494-03 09/13/21 19:25 • (DUP) R3704153-8 09/13/21 19:30

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

Laboratory Control Sample (LCS)

(LCS) R3704153-2 09/13/21 16:18

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.26	92.6	80.0-120	

L1400478-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400478-03 09/13/21 18:07 • (MS) R3704153-3 09/13/21 18:12 • (MSD) R3704153-4 09/13/21 18:17

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	13.7	13.9	68.7	69.7	1	75.0-125	J6	J6	1.50	20

L1400478-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400478-03 09/13/21 18:07 • (MS) R3704153-5 09/13/21 18:22

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	638	U	620	97.2	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3705376-1 09/16/21 13:03

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

L1400505-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400505-01 09/16/21 13:31 • (DUP) R3705376-3 09/16/21 13:37

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

L1401227-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401227-02 09/16/21 15:46 • (DUP) R3705376-8 09/16/21 15:51

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

Laboratory Control Sample (LCS)

(LCS) R3705376-2 09/16/21 13:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.42	94.2	80.0-120	

L1400560-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400560-01 09/16/21 14:34 • (MS) R3705376-4 09/16/21 14:39 • (MSD) R3705376-5 09/16/21 14:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	17.5	17.2	87.7	86.1	1	75.0-125			1.84	20

L1400560-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400560-01 09/16/21 14:34 • (MS) R3705376-6 09/16/21 14:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	660	U	696	105	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1400087-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1400087-04 09/10/21 20:10 • (DUP) R3703042-2 09/10/21 20:10

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	6.30	6.27	1	0.477		1

Sample Narrative:

OS: 6.3 at 22.5C

DUP: 6.27 at 21.7C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1400494-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1400494-04 09/10/21 20:10 • (DUP) R3703042-3 09/10/21 20:10

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	9.07	9.09	1	0.220		1

Sample Narrative:

OS: 9.07 at 21C

DUP: 9.09 at 21C

Laboratory Control Sample (LCS)

(LCS) R3703042-1 09/10/21 20:10

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

Sample Narrative:

LCS: 10.01 at 22.7C

L1400505-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1400505-06 09/10/21 19:05 • (DUP) R3703044-2 09/10/21 19:05

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.75	8.80	1	0.570		1

Sample Narrative:

OS: 8.75 at 23.3C

DUP: 8.8 at 23.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1400557-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1400557-03 09/10/21 19:05 • (DUP) R3703044-3 09/10/21 19:05

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.32	8.30	1	0.241		1

Sample Narrative:

OS: 8.32 at 22.1C

DUP: 8.3 at 22.2C

Laboratory Control Sample (LCS)

(LCS) R3703044-1 09/10/21 19:05

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

Sample Narrative:

LCS: 10.04 at 22.7C

Method Blank (MB)

(MB) R3703830-1 09/13/21 19:21

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3703830-2 09/13/21 19:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	97.9	97.9	80.0-120	
Nickel	100	100	100	80.0-120	
Selenium	100	100	100	80.0-120	

L1400494-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-02 09/13/21 19:27 • (MS) R3703830-5 09/13/21 19:36 • (MSD) R3703830-6 09/13/21 19:40

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	238	348	550	110	312	1	75.0-125		J3 J5	45.0	20
Cadmium	100	0.414	92.4	101	92.0	100	1	75.0-125			8.47	20
Nickel	100	14.2	115	117	101	102	1	75.0-125			1.24	20
Selenium	100	U	94.1	104	94.1	104	1	75.0-125			9.86	20

1
Cp

2
Tc

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Ss

4
Cn

5
Sr

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Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3703035-1 09/10/21 20:02

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) R3703035-2 09/10/21 20:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	90.6	90.6	80.0-120	

L1400494-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-02 09/10/21 20:08 • (MS) R3703035-5 09/10/21 20:18 • (MSD) R3703035-6 09/10/21 20:22

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 %
Arsenic	100	10.6	93.2	103	82.7	92.2	5	75.0-125			9.75	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3703481-3 09/11/21 16:34

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)	98.5			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3703481-2 09/11/21 15:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.69	122	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

L1398592-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398592-06 09/11/21 20:25 • (MS) R3703481-6 09/12/21 03:08 • (MSD) R3703481-7 09/12/21 04:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	U	1.72	2.97	31.3	54.0	1	10.0-151		J3	53.3	28
(S) a,a,a-Trifluorotoluene(FID)					95.9	98.8		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704214-3 09/10/21 18:11

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	109			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	94.5			70.0-130

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

(LCS) R3704214-1 09/10/21 16:56 • (LCSD) R3704214-2 09/10/21 17:15

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	0.105	0.107	84.0	85.6	70.0-123			1.89	20
Ethylbenzene	0.125	0.120	0.121	96.0	96.8	74.0-126			0.830	20
Toluene	0.125	0.113	0.120	90.4	96.0	75.0-121			6.01	20
1,2,4-Trimethylbenzene	0.125	0.123	0.126	98.4	101	70.0-126			2.41	20
1,3,5-Trimethylbenzene	0.125	0.127	0.132	102	106	73.0-127			3.86	20
Xylenes, Total	0.375	0.356	0.377	94.9	101	72.0-127			5.73	20
(S) Toluene-d8				107	108	75.0-131				
(S) 4-Bromofluorobenzene				105	105	67.0-138				
(S) 1,2-Dichloroethane-d4				106	103	70.0-130				

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3704026-1 09/13/21 15:27

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	1.26	⬇	0.274	4.00
(S) o-Terphenyl	80.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3704026-2 09/13/21 15:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	45.2	90.4	50.0-150	
(S) o-Terphenyl			81.4	18.0-148	

L1400494-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-01 09/13/21 16:08 • (MS) R3704026-3 09/13/21 19:38 • (MSD) R3704026-4 09/13/21 20:13

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	4.76	40.8	40.2	72.1	70.9	1	50.0-150			1.48	20
(S) o-Terphenyl					60.4	57.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703371-2 09/10/21 21:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	69.2			14.0-149
(S) 2-Fluorobiphenyl	76.1			34.0-125
(S) p-Terphenyl-d14	92.3			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3703371-1 09/10/21 21:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0600	75.0	49.0-120	
Naphthalene	0.0800	0.0583	72.9	50.0-120	
1-Methylnaphthalene	0.0800	0.0594	74.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0566	70.8	50.0-120	
(S) Nitrobenzene-d5			77.3	14.0-149	
(S) 2-Fluorobiphenyl			81.1	34.0-125	
(S) p-Terphenyl-d14			92.8	23.0-120	

L1399080-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399080-02 09/11/21 02:37 • (MS) R3703371-3 09/11/21 02:57 • (MSD) R3703371-4 09/11/21 03:17

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 %
Fluorene	0.0800	0.00562	0.0399	0.0387	42.9	41.4	1	11.0-130			3.05	29
Naphthalene	0.0800	0.0189	0.0529	0.0517	42.5	41.0	1	10.0-135			2.29	27
1-Methylnaphthalene	0.0800	0.0149	0.0512	0.0525	45.4	47.0	1	10.0-142			2.51	28
2-Methylnaphthalene	0.0800	0.0293	0.0591	0.0614	37.2	40.1	1	10.0-137			3.82	28
(S) Nitrobenzene-d5					61.8	65.3		14.0-149				
(S) 2-Fluorobiphenyl					28.7	40.5		34.0-125	J2			
(S) p-Terphenyl-d14					52.0	65.6		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

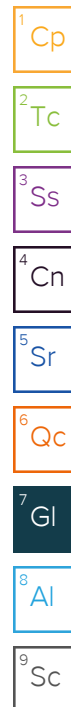
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


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



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

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

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



Caerus Oil & Gas LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606				Billing Information:				Pres Chk		Analysis / Container / Preservative										Chain of Custody Page <u>1</u> of <u>2</u>	
				Same as above														 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859			
Report to: bmiddleton@caerusoilandgas.com				Email To: bmiddleton@caerusoilandgas.com																	
Project Description: J17E Dumpline Release				City/State Collected: Mamm Creek, CO																	
Phone:		Client Project #		Lab Project #																	
Fax:		J17E		J17E																	
Collected by (print):		Site/Facility ID #		P.O. #																	
<i>[Signature]</i>		J17E		J17E																	
Collected by (signature):		Rush? (Lab MUST Be Notified)		Quote #																	
<i>[Signature]</i>		<input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Date Results Needed Standard TAT																	
Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>																					
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene							
20210902-J17E(MW10)	Grab	SS	X	9/2/21	1110	2	X	X	X	X	X	X	X	X							
@ 5-7'																					
20210902-J17E(MW10)						1135	2														
@ 15-17'																					
20210902-J17E(MW10)						1200	2														
@ 25-27'																					
20210902-J17E(MW10)						1300	2														
@ 35-37'																					
20210902-J17E(MW10)	✓	✓		✓	✓	1330	2	✓	✓	✓	✓	✓	✓	✓							
@ 45-47'																					
* Matrix:		SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other																			
Remarks:		Analyze under Protection of Groundwater Soil Screening Level Concentrations Risk Based (R) and MCL Based (M) for all soil samples.																			
Samples returned via:		Tracking # 5016 1232 3076																			
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Trip Blank Received: Yes / No		HCL / MeOH TBR													
<i>[Signature]</i>		9/2/21	1050	<i>[Signature]</i>		9/1															
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Temp: <i>Alomac</i>		Bottles Received: 14													
<i>[Signature]</i>		9/2/21	1500	<i>[Signature]</i>		5.1±0.5.1															
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature)		Date:		Time:		Hold:					Condition:						
<i>[Signature]</i>				<i>[Signature]</i>		9/8/21		915							NCF 10						

Caerus Oil & Gas LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606			Billing Information: Same as above			Pres Chk	Analysis / Container / Preservative										Chain of Custody		Page 2 of 2		
Report to: bmiddleton@caerusoilandgas.com			Email To: bmiddleton@caerusoilandgas.com														 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859				
Project Description: J17E Dumpline Release			City/State Collected: Mamm Creek, CO																		
Phone: Fax:		Client Project # J17E		Lab Project # J17E													L # 1900494				
Collected by (print):		Site/Facility ID # J17E		P.O. # J17E													Table #				
Collected by (signature):		Rush? (Lab MUST Be Notified) Same Day Five Day Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Three Day		Quote #													Acctnum:				
Immediately Packed on Ice N Y X				Date Results Needed Standard TAP													Template:				
																	Prelogin:				
																	TSR:				
																	PB:				
																	Shipped Via:				
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene				Remarks	Sample # (lab only)		
20210902-J17E (MW10) @ 55-56.5'	Grab	SS	X	9/2/21	1400	2													-06		
20210902-J17E (MW10) @ 65-66.3'	Grab	SS	X	9/2/21	1450	2													-07		
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other		Remarks: Analyze under Protection of Groundwater Soil Screening Level Concentrations Risk Based (R) and MCL Based (M) for all soil samples. Samples returned via: __ UPS __ FedEx __ Courier __ Tracking #						pH _____ Temp _____ Flow _____ Other _____						Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headspace: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N							
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Trip Blank Received: Yes (No) HCL / MeOH TBR								Bottles Received: If preservation required by Login: Date/Time							
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Temp: 5.1 + 0 = 5.1								14							
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature)		Date:		Time:		Hold:						Condition: NCF OK					

Caerus Oil and Gas

Sample Delivery Group: L1400505
Samples Received: 09/08/2021
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

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

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

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SAMPLE SUMMARY

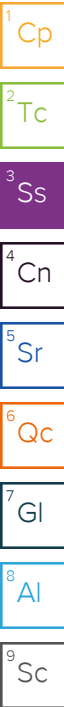
20210901-J17E(AS01)@25-27' L1400505-01 Solid

Collected by
DH

Collected date/time
09/01/21 08:37

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:06	09/13/21 20:06	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 13:31	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:09	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:52	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738117	2000	09/09/21 10:57	09/11/21 17:57	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	200	09/09/21 10:57	09/10/21 23:32	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	10	09/13/21 07:31	09/14/21 00:04	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737969	1	09/10/21 14:32	09/11/21 01:54	AAT	Mt. Juliet, TN



20210901-J17E(AS01)@35-37' L1400505-02 Solid

Collected by
DH

Collected date/time
09/01/21 08:55

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:14	09/13/21 20:14	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 13:42	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:12	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:55	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738117	2000	09/09/21 10:57	09/11/21 18:19	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1740097	40	09/09/21 10:57	09/14/21 21:42	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	10	09/13/21 07:31	09/13/21 23:51	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737969	1	09/10/21 14:32	09/11/21 02:14	AAT	Mt. Juliet, TN

20210901-J17E(AS01)@40-41.5' L1400505-03 Solid

Collected by
DH

Collected date/time
09/01/21 09:12

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:16	09/13/21 20:16	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 13:47	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:15	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 20:58	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738117	2000	09/09/21 10:57	09/11/21 18:41	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1740097	40	09/09/21 10:57	09/14/21 22:01	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	10	09/13/21 07:31	09/14/21 00:31	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737969	1	09/10/21 14:32	09/11/21 02:33	AAT	Mt. Juliet, TN

20210901-J17E(AS01)@50-52' L1400505-04 Solid

Collected by
DH

Collected date/time
09/01/21 09:41

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:19	09/13/21 20:19	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 13:52	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:18	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 21:02	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1738117	1000	09/09/21 10:57	09/11/21 19:02	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1740542	40	09/09/21 10:57	09/15/21 14:06	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	5	09/13/21 07:31	09/14/21 13:51	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737969	1	09/10/21 14:32	09/11/21 02:53	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20210901-J17E(AS01)@60-61.5' L1400505-05 Solid

Collected by
DH

Collected date/time
09/01/21 10:11

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:22	09/13/21 20:22	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 13:57	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:21	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 21:05	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1739992	25	09/09/21 10:57	09/14/21 23:56	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 10:57	09/10/21 21:58	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	1	09/13/21 07:31	09/14/21 14:05	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737969	1	09/10/21 14:32	09/11/21 03:13	AAT	Mt. Juliet, TN

20210901-J17E(AS01)@68-70' L1400505-06 Solid

Collected by
DH

Collected date/time
09/01/21 10:48

Received date/time
09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1737266	1	09/13/21 20:24	09/13/21 20:24	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1739467	1	09/13/21 19:37	09/16/21 14:03	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738430	1	09/10/21 16:00	09/10/21 19:05	KAB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738000	1	09/10/21 10:34	09/13/21 20:25	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738008	5	09/10/21 10:36	09/10/21 21:08	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1739190	25	09/09/21 10:57	09/14/21 03:43	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738107	1	09/09/21 10:57	09/10/21 22:17	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1738868	5	09/13/21 07:31	09/13/21 23:24	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737969	1	09/10/21 14:32	09/11/21 03:33	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.964		1	09/13/2021 20:06	WG1737266

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	09/16/2021 13:31	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.65	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400505-01 WG1738430: 8.65 at 23.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	274		0.0852	0.500	1	09/13/2021 20:09	WG1738000
Cadmium	0.445	J	0.0471	0.500	1	09/13/2021 20:09	WG1738000
Nickel	16.3		0.132	2.00	1	09/13/2021 20:09	WG1738000
Selenium	1.51	J	0.764	2.00	1	09/13/2021 20:09	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	15.3		0.100	1.00	5	09/10/2021 20:52	WG1738008

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

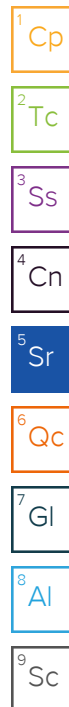
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2550		43.4	200	2000	09/11/2021 17:57	WG1738117
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.5			77.0-120		09/11/2021 17:57	WG1738117

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	0.755		0.0934	0.200	200	09/10/2021 23:32	WG1738107
Toluene	24.0		0.260	1.00	200	09/10/2021 23:32	WG1738107
Ethylbenzene	3.68		0.147	0.500	200	09/10/2021 23:32	WG1738107
Xylenes, Total	63.3		0.176	1.30	200	09/10/2021 23:32	WG1738107
1,2,4-Trimethylbenzene	12.3		0.316	1.00	200	09/10/2021 23:32	WG1738107
1,3,5-Trimethylbenzene	9.91		0.400	1.00	200	09/10/2021 23:32	WG1738107
(S) Toluene-d8	109			75.0-131		09/10/2021 23:32	WG1738107
(S) 4-Bromofluorobenzene	101			67.0-138		09/10/2021 23:32	WG1738107
(S) 1,2-Dichloroethane-d4	102			70.0-130		09/10/2021 23:32	WG1738107

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	1110		16.1	40.0	10	09/14/2021 00:04	WG1738868
C28-C36 Motor Oil Range	240		2.74	40.0	10	09/14/2021 00:04	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	45.0			18.0-148		09/14/2021 00:04	WG1738868

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
Fluorene	0.133		0.00205	0.00600	1	09/11/2021 01:54	WG1737969
Naphthalene	1.11		0.00408	0.0200	1	09/11/2021 01:54	WG1737969
1-Methylnaphthalene	1.12		0.00449	0.0200	1	09/11/2021 01:54	WG1737969
2-Methylnaphthalene	2.74		0.00427	0.0200	1	09/11/2021 01:54	WG1737969
(S) p-Terphenyl-d14	91.6			23.0-120		09/11/2021 01:54	WG1737969
(S) Nitrobenzene-d5	0.000	J2		14.0-149		09/11/2021 01:54	WG1737969
(S) 2-Fluorobiphenyl	66.2			34.0-125		09/11/2021 01:54	WG1737969

Sample Narrative:

L1400505-01 WG1737969: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.988		1	09/13/2021 20:14	WG1737266

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/16/2021 13:42	WG1739467

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.66	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400505-02 WG1738430: 8.66 at 23.3C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	210		0.0852	0.500	1	09/13/2021 20:12	WG1738000
Cadmium	0.450	J	0.0471	0.500	1	09/13/2021 20:12	WG1738000
Nickel	14.3		0.132	2.00	1	09/13/2021 20:12	WG1738000
Selenium	1.78	J	0.764	2.00	1	09/13/2021 20:12	WG1738000

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	17.7		0.100	1.00	5	09/10/2021 20:55	WG1738008

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

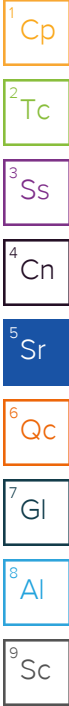
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	926		43.4	200	2000	09/11/2021 18:19	WG1738117
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.2			77.0-120		09/11/2021 18:19	WG1738117

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	1.30		0.0187	0.0400	40	09/14/2021 21:42	WG1740097
Toluene	50.1		0.0520	0.200	40	09/14/2021 21:42	WG1740097
Ethylbenzene	7.31		0.0295	0.100	40	09/14/2021 21:42	WG1740097
Xylenes, Total	113		0.0352	0.260	40	09/14/2021 21:42	WG1740097
1,2,4-Trimethylbenzene	23.2		0.0632	0.200	40	09/14/2021 21:42	WG1740097
1,3,5-Trimethylbenzene	22.4		0.0800	0.200	40	09/14/2021 21:42	WG1740097
(S) <i>Toluene-d8</i>	101			75.0-131		09/14/2021 21:42	WG1740097
(S) <i>4</i> -Bromofluorobenzene	113			67.0-138		09/14/2021 21:42	WG1740097
(S) <i>1,2</i> -Dichloroethane- <i>d4</i>	101			70.0-130		09/14/2021 21:42	WG1740097

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	1550		16.1	40.0	10	09/13/2021 23:51	WG1738868
C28-C36 Motor Oil Range	308		2.74	40.0	10	09/13/2021 23:51	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	58.5			18.0-148		09/13/2021 23:51	WG1738868

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
Fluorene	0.100		0.00205	0.00600	1	09/11/2021 02:14	WG1737969
Naphthalene	1.28		0.00408	0.0200	1	09/11/2021 02:14	WG1737969
1-Methylnaphthalene	1.10		0.00449	0.0200	1	09/11/2021 02:14	WG1737969
2-Methylnaphthalene	2.57		0.00427	0.0200	1	09/11/2021 02:14	WG1737969
(S) p-Terphenyl-d14	86.0			23.0-120		09/11/2021 02:14	WG1737969
(S) Nitrobenzene-d5	0.000	J2		14.0-149		09/11/2021 02:14	WG1737969
(S) 2-Fluorobiphenyl	73.2			34.0-125		09/11/2021 02:14	WG1737969

Sample Narrative:

L1400505-02 WG1737969: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.10		1	09/13/2021 20:16	WG1737266

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	09/16/2021 13:47	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400505-03 WG1738430: 8.7 at 23C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	270		0.0852	0.500	1	09/13/2021 20:15	WG1738000
Cadmium	0.351	J	0.0471	0.500	1	09/13/2021 20:15	WG1738000
Nickel	19.4		0.132	2.00	1	09/13/2021 20:15	WG1738000
Selenium	1.34	J	0.764	2.00	1	09/13/2021 20:15	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.9		0.100	1.00	5	09/10/2021 20:58	WG1738008

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

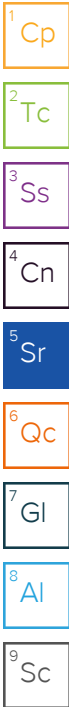
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	708		43.4	200	2000	09/11/2021 18:41	WG1738117
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.5			77.0-120		09/11/2021 18:41	WG1738117

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	0.611		0.0187	0.0400	40	09/14/2021 22:01	WG1740097
Toluene	30.7		0.0520	0.200	40	09/14/2021 22:01	WG1740097
Ethylbenzene	4.94		0.0295	0.100	40	09/14/2021 22:01	WG1740097
Xylenes, Total	76.7		0.0352	0.260	40	09/14/2021 22:01	WG1740097
1,2,4-Trimethylbenzene	15.6		0.0632	0.200	40	09/14/2021 22:01	WG1740097
1,3,5-Trimethylbenzene	14.8		0.0800	0.200	40	09/14/2021 22:01	WG1740097
(S) <i>Toluene-d8</i>	99.0			75.0-131		09/14/2021 22:01	WG1740097
(S) <i>4</i> -Bromofluorobenzene	115			67.0-138		09/14/2021 22:01	WG1740097
(S) <i>1,2</i> -Dichloroethane-d4	104			70.0-130		09/14/2021 22:01	WG1740097

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	558		16.1	40.0	10	09/14/2021 00:31	WG1738868
C28-C36 Motor Oil Range	282		2.74	40.0	10	09/14/2021 00:31	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	59.2			18.0-148		09/14/2021 00:31	WG1738868

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
Fluorene	0.0420		0.00205	0.00600	1	09/11/2021 02:33	WG1737969
Naphthalene	0.946		0.00408	0.0200	1	09/11/2021 02:33	WG1737969
1-Methylnaphthalene	0.705		0.00449	0.0200	1	09/11/2021 02:33	WG1737969
2-Methylnaphthalene	1.79		0.00427	0.0200	1	09/11/2021 02:33	WG1737969
(S) p-Terphenyl-d14	114			23.0-120		09/11/2021 02:33	WG1737969
(S) Nitrobenzene-d5	0.000	J2		14.0-149		09/11/2021 02:33	WG1737969
(S) 2-Fluorobiphenyl	78.5			34.0-125		09/11/2021 02:33	WG1737969

Sample Narrative:

L1400505-03 WG1737969: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.22		1	09/13/2021 20:19	WG1737266

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	09/16/2021 13:52	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400505-04 WG1738430: 8.7 at 23.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	255		0.0852	0.500	1	09/13/2021 20:18	WG1738000
Cadmium	0.250	J	0.0471	0.500	1	09/13/2021 20:18	WG1738000
Nickel	14.6		0.132	2.00	1	09/13/2021 20:18	WG1738000
Selenium	1.12	J	0.764	2.00	1	09/13/2021 20:18	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.30		0.100	1.00	5	09/10/2021 21:02	WG1738008

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

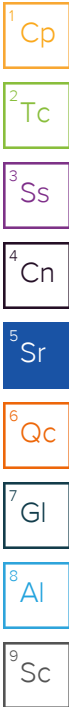
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	826		21.7	100	1000	09/11/2021 19:02	WG1738117
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.2			77.0-120		09/11/2021 19:02	WG1738117

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	0.0875		0.0187	0.0400	40	09/15/2021 14:06	WG1740542
Toluene	5.98		0.0520	0.200	40	09/15/2021 14:06	WG1740542
Ethylbenzene	0.976		0.0295	0.100	40	09/15/2021 14:06	WG1740542
Xylenes, Total	17.2		0.0352	0.260	40	09/15/2021 14:06	WG1740542
1,2,4-Trimethylbenzene	3.78		0.0632	0.200	40	09/15/2021 14:06	WG1740542
1,3,5-Trimethylbenzene	3.29		0.0800	0.200	40	09/15/2021 14:06	WG1740542
(S) Toluene-d8	106			75.0-131		09/15/2021 14:06	WG1740542
(S) 4-Bromofluorobenzene	108			67.0-138		09/15/2021 14:06	WG1740542
(S) 1,2-Dichloroethane-d4	104			70.0-130		09/15/2021 14:06	WG1740542

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	311		8.05	20.0	5	09/14/2021 13:51	WG1738868
C28-C36 Motor Oil Range	55.5	B	1.37	20.0	5	09/14/2021 13:51	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	70.2			18.0-148		09/14/2021 13:51	WG1738868

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
Fluorene	0.00943		0.00205	0.00600	1	09/11/2021 02:53	WG1737969
Naphthalene	0.204		0.00408	0.0200	1	09/11/2021 02:53	WG1737969
1-Methylnaphthalene	0.168		0.00449	0.0200	1	09/11/2021 02:53	WG1737969
2-Methylnaphthalene	0.464		0.00427	0.0200	1	09/11/2021 02:53	WG1737969
(S) p-Terphenyl-d14	62.2			23.0-120		09/11/2021 02:53	WG1737969
(S) Nitrobenzene-d5	0.000	J2		14.0-149		09/11/2021 02:53	WG1737969
(S) 2-Fluorobiphenyl	53.6			34.0-125		09/11/2021 02:53	WG1737969

Sample Narrative:

L1400505-04 WG1737969: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.07		1	09/13/2021 20:22	WG1737266

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	09/16/2021 13:57	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.61	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400505-05 WG1738430: 8.61 at 23.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	205		0.0852	0.500	1	09/13/2021 20:21	WG1738000
Cadmium	0.247	J	0.0471	0.500	1	09/13/2021 20:21	WG1738000
Nickel	13.6		0.132	2.00	1	09/13/2021 20:21	WG1738000
Selenium	U		0.764	2.00	1	09/13/2021 20:21	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.42		0.100	1.00	5	09/10/2021 21:05	WG1738008

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

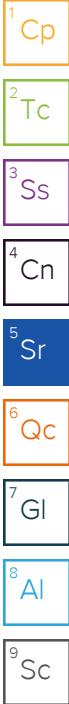
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	36.8		0.543	2.50	25	09/14/2021 23:56	WG1739992
(S) a,a,a-Trifluorotoluene(FID)	81.2			77.0-120		09/14/2021 23:56	WG1739992

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	0.000838	J	0.000467	0.00100	1	09/10/2021 21:58	WG1738107
Toluene	0.0169		0.00130	0.00500	1	09/10/2021 21:58	WG1738107
Ethylbenzene	0.00454		0.000737	0.00250	1	09/10/2021 21:58	WG1738107
Xylenes, Total	0.0611		0.000880	0.00650	1	09/10/2021 21:58	WG1738107
1,2,4-Trimethylbenzene	0.0221		0.00158	0.00500	1	09/10/2021 21:58	WG1738107
1,3,5-Trimethylbenzene	0.0217		0.00200	0.00500	1	09/10/2021 21:58	WG1738107
(S) Toluene-d8	112			75.0-131		09/10/2021 21:58	WG1738107
(S) 4-Bromofluorobenzene	104			67.0-138		09/10/2021 21:58	WG1738107
(S) 1,2-Dichloroethane-d4	100			70.0-130		09/10/2021 21:58	WG1738107

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	10.2		1.61	4.00	1	09/14/2021 14:05	WG1738868
C28-C36 Motor Oil Range	23.9		0.274	4.00	1	09/14/2021 14:05	WG1738868



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	41.0			18.0-148		09/14/2021 14:05	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/11/2021 03:13	WG1737969
Naphthalene	0.0122	U	0.00408	0.0200	1	09/11/2021 03:13	WG1737969
1-Methylnaphthalene	0.00787	U	0.00449	0.0200	1	09/11/2021 03:13	WG1737969
2-Methylnaphthalene	0.0172	U	0.00427	0.0200	1	09/11/2021 03:13	WG1737969
(S) p-Terphenyl-d14	79.5			23.0-120		09/11/2021 03:13	WG1737969
(S) Nitrobenzene-d5	66.7			14.0-149		09/11/2021 03:13	WG1737969
(S) 2-Fluorobiphenyl	72.8			34.0-125		09/11/2021 03:13	WG1737969

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.09		1	09/13/2021 20:24	WG1737266

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	09/16/2021 14:03	WG1739467

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.75	T8	1	09/10/2021 19:05	WG1738430

Sample Narrative:

L1400505-06 WG1738430: 8.75 at 23.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	265		0.0852	0.500	1	09/13/2021 20:25	WG1738000
Cadmium	0.432	J	0.0471	0.500	1	09/13/2021 20:25	WG1738000
Nickel	19.1		0.132	2.00	1	09/13/2021 20:25	WG1738000
Selenium	1.74	J	0.764	2.00	1	09/13/2021 20:25	WG1738000

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	30.1		0.100	1.00	5	09/10/2021 21:08	WG1738008

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	12.0		0.543	2.50	25	09/14/2021 03:43	WG1739190
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.7			77.0-120		09/14/2021 03:43	WG1739190

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	0.00455		0.000467	0.00100	1	09/10/2021 22:17	WG1738107
Toluene	0.132		0.00130	0.00500	1	09/10/2021 22:17	WG1738107
Ethylbenzene	0.0170		0.000737	0.00250	1	09/10/2021 22:17	WG1738107
Xylenes, Total	0.251		0.000880	0.00650	1	09/10/2021 22:17	WG1738107
1,2,4-Trimethylbenzene	0.0393		0.00158	0.00500	1	09/10/2021 22:17	WG1738107
1,3,5-Trimethylbenzene	0.0332		0.00200	0.00500	1	09/10/2021 22:17	WG1738107
(S) <i>Toluene-d8</i>	111			75.0-131		09/10/2021 22:17	WG1738107
(S) <i>4</i> -Bromofluorobenzene	105			67.0-138		09/10/2021 22:17	WG1738107
(S) <i>1,2</i> -Dichloroethane-d4	92.9			70.0-130		09/10/2021 22:17	WG1738107

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	62.6		8.05	20.0	5	09/13/2021 23:24	WG1738868
C28-C36 Motor Oil Range	220		1.37	20.0	5	09/13/2021 23:24	WG1738868

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	45.1			18.0-148		09/13/2021 23:24	WG1738868

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
Fluorene	U		0.00205	0.00600	1	09/11/2021 03:33	WG1737969
Naphthalene	U		0.00408	0.0200	1	09/11/2021 03:33	WG1737969
1-Methylnaphthalene	U		0.00449	0.0200	1	09/11/2021 03:33	WG1737969
2-Methylnaphthalene	0.00468	J	0.00427	0.0200	1	09/11/2021 03:33	WG1737969
(S) p-Terphenyl-d14	96.8			23.0-120		09/11/2021 03:33	WG1737969
(S) Nitrobenzene-d5	67.5			14.0-149		09/11/2021 03:33	WG1737969
(S) 2-Fluorobiphenyl	93.5			34.0-125		09/11/2021 03:33	WG1737969

1
Cp

2
Tc

3
Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3705376-1 09/16/21 13:03

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

L1400505-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400505-01 09/16/21 13:31 • (DUP) R3705376-3 09/16/21 13:37

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

L1401227-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401227-02 09/16/21 15:46 • (DUP) R3705376-8 09/16/21 15:51

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

Laboratory Control Sample (LCS)

(LCS) R3705376-2 09/16/21 13:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.42	94.2	80.0-120	

L1400560-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400560-01 09/16/21 14:34 • (MS) R3705376-4 09/16/21 14:39 • (MSD) R3705376-5 09/16/21 14:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	17.5	17.2	87.7	86.1	1	75.0-125			1.84	20

L1400560-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400560-01 09/16/21 14:34 • (MS) R3705376-6 09/16/21 14:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	660	U	696	105	50	75.0-125	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1400505-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1400505-06 09/10/21 19:05 • (DUP) R3703044-2 09/10/21 19:05

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.75	8.80	1	0.570		1

Sample Narrative:

OS: 8.75 at 23.3C

DUP: 8.8 at 23.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1400557-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1400557-03 09/10/21 19:05 • (DUP) R3703044-3 09/10/21 19:05

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.32	8.30	1	0.241		1

Sample Narrative:

OS: 8.32 at 22.1C

DUP: 8.3 at 22.2C

Laboratory Control Sample (LCS)

(LCS) R3703044-1 09/10/21 19:05

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

Sample Narrative:

LCS: 10.04 at 22.7C

Method Blank (MB)

(MB) R3703830-1 09/13/21 19:21

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3703830-2 09/13/21 19:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	97.9	97.9	80.0-120	
Nickel	100	100	100	80.0-120	
Selenium	100	100	100	80.0-120	

L1400494-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-02 09/13/21 19:27 • (MS) R3703830-5 09/13/21 19:36 • (MSD) R3703830-6 09/13/21 19:40

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	238	348	550	110	312	1	75.0-125		J3 J5	45.0	20
Cadmium	100	0.414	92.4	101	92.0	100	1	75.0-125			8.47	20
Nickel	100	14.2	115	117	101	102	1	75.0-125			1.24	20
Selenium	100	U	94.1	104	94.1	104	1	75.0-125			9.86	20

1
Cp

2
Tc

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Ss

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Cn

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Sr

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Qc

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Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3703035-1 09/10/21 20:02

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

Laboratory Control Sample (LCS)

(LCS) R3703035-2 09/10/21 20:05

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	90.6	90.6	80.0-120	

L1400494-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-02 09/10/21 20:08 • (MS) R3703035-5 09/10/21 20:18 • (MSD) R3703035-6 09/10/21 20:22

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	10.6	93.2	103	82.7	92.2	5	75.0-125			9.75	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3703303-3 09/11/21 11:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.806	⬇	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.6			77.0-120

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

(LCS) R3703303-1 09/11/21 09:56 • (LCSD) R3703303-2 09/11/21 10:17

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	5.44	5.29	98.9	96.2	72.0-127			2.80	20
(S) a,a,a-Trifluorotoluene(FID)				104	104	77.0-120				

L1399625-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399625-04 09/11/21 11:57 • (MS) R3703303-4 09/11/21 19:24 • (MSD) R3703303-5 09/11/21 19:45

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 %
TPH (GC/FID) Low Fraction	158	U	95.0	98.6	68.8	71.4	25	10.0-151			3.72	28
(S) a,a,a-Trifluorotoluene(FID)					103	102		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704004-2 09/14/21 03:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	90.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3704004-1 09/14/21 02:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.64	103	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			111	77.0-120	

1
Cp

2
Tc

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Ss

4
Cn

5
Sr

6
Qc

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Gl

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Al

9
Sc

Method Blank (MB)

(MB) R3704534-2 09/14/21 16:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	114			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3704534-1 09/14/21 15:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.22	94.9	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3704214-3 09/10/21 18:11

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	109			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	94.5			70.0-130

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

(LCS) R3704214-1 09/10/21 16:56 • (LCSD) R3704214-2 09/10/21 17:15

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	0.105	0.107	84.0	85.6	70.0-123			1.89	20
Ethylbenzene	0.125	0.120	0.121	96.0	96.8	74.0-126			0.830	20
Toluene	0.125	0.113	0.120	90.4	96.0	75.0-121			6.01	20
1,2,4-Trimethylbenzene	0.125	0.123	0.126	98.4	101	70.0-126			2.41	20
1,3,5-Trimethylbenzene	0.125	0.127	0.132	102	106	73.0-127			3.86	20
Xylenes, Total	0.375	0.356	0.377	94.9	101	72.0-127			5.73	20
(S) Toluene-d8				107	108	75.0-131				
(S) 4-Bromofluorobenzene				105	105	67.0-138				
(S) 1,2-Dichloroethane-d4				106	103	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704507-3 09/14/21 19:26

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	107			75.0-131
(S) 4-Bromofluorobenzene	93.6			67.0-138
(S) 1,2-Dichloroethane-d4	95.3			70.0-130

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

(LCS) R3704507-1 09/14/21 18:09 • (LCSD) R3704507-2 09/14/21 18:28

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	0.123	0.136	98.4	109	70.0-123			10.0	20
Ethylbenzene	0.125	0.121	0.139	96.8	111	74.0-126			13.8	20
Toluene	0.125	0.119	0.132	95.2	106	75.0-121			10.4	20
1,2,4-Trimethylbenzene	0.125	0.128	0.142	102	114	70.0-126			10.4	20
1,3,5-Trimethylbenzene	0.125	0.129	0.141	103	113	73.0-127			8.89	20
Xylenes, Total	0.375	0.347	0.325	92.5	86.7	72.0-127			6.55	20
(S) Toluene-d8				102	99.7	75.0-131				
(S) 4-Bromofluorobenzene				96.9	104	67.0-138				
(S) 1,2-Dichloroethane-d4				102	102	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704674-3 09/15/21 11:12

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	110			75.0-131
(S) 4-Bromofluorobenzene	96.2			67.0-138
(S) 1,2-Dichloroethane-d4	93.1			70.0-130

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

(LCS) R3704674-1 09/15/21 10:14 • (LCSD) R3704674-2 09/15/21 10:33

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	0.129	0.126	103	101	70.0-123			2.35	20
Ethylbenzene	0.125	0.150	0.152	120	122	74.0-126			1.32	20
Toluene	0.125	0.137	0.138	110	110	75.0-121			0.727	20
1,2,4-Trimethylbenzene	0.125	0.148	0.149	118	119	70.0-126			0.673	20
1,3,5-Trimethylbenzene	0.125	0.148	0.150	118	120	73.0-127			1.34	20
Xylenes, Total	0.375	0.407	0.416	109	111	72.0-127			2.19	20
(S) Toluene-d8				110	112	75.0-131				
(S) 4-Bromofluorobenzene				96.3	97.6	67.0-138				
(S) 1,2-Dichloroethane-d4				99.4	102	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704026-1 09/13/21 15:27

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	1.26	⬇	0.274	4.00
(S) o-Terphenyl	80.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3704026-2 09/13/21 15:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	45.2	90.4	50.0-150	
(S) o-Terphenyl			81.4	18.0-148	

L1400494-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400494-01 09/13/21 16:08 • (MS) R3704026-3 09/13/21 19:38 • (MSD) R3704026-4 09/13/21 20:13

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	4.76	40.8	40.2	72.1	70.9	1	50.0-150			1.48	20
(S) o-Terphenyl					60.4	57.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703848-2 09/10/21 22:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	72.5			14.0-149
(S) 2-Fluorobiphenyl	92.2			34.0-125
(S) p-Terphenyl-d14	110			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3703848-1 09/10/21 22:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0722	90.3	49.0-120	
Naphthalene	0.0800	0.0612	76.5	50.0-120	
1-Methylnaphthalene	0.0800	0.0687	85.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0587	73.4	50.0-120	
(S) Nitrobenzene-d5			79.0	14.0-149	
(S) 2-Fluorobiphenyl			92.7	34.0-125	
(S) p-Terphenyl-d14			106	23.0-120	

L1399629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399629-01 09/11/21 04:52 • (MS) R3703848-3 09/11/21 05:12 • (MSD) R3703848-4 09/11/21 05:32

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 %
Fluorene	0.0788	U	0.0496	0.0540	62.9	67.8	1	11.0-130			8.49	29
Naphthalene	0.0788	U	0.0475	0.0500	60.3	62.8	1	10.0-135			5.13	27
1-Methylnaphthalene	0.0788	U	0.0506	0.0475	63.5	59.0	1	10.0-142			6.32	28
2-Methylnaphthalene	0.0788	U	0.0446	0.0500	56.1	62.3	1	10.0-137			11.4	28
(S) Nitrobenzene-d5					61.4	57.0		14.0-149				
(S) 2-Fluorobiphenyl					63.6	61.7		34.0-125				
(S) p-Terphenyl-d14					57.5	77.7		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

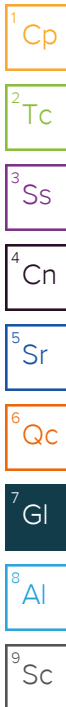
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

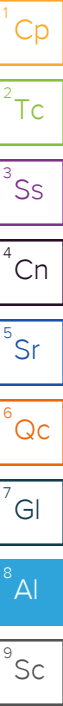
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



[illegible]

Caerus Oil and Gas

Sample Delivery Group: L1397311
Samples Received: 08/31/2021
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

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



Pace Analytical National

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

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

SAMPLE SUMMARY

20210827-J17E(SVE01)@25-27' L1397311-01 Solid

Collected by
Parker Coit

Collected date/time
08/27/21 08:23

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:13	09/06/21 18:13	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1733822	1	09/02/21 13:45	09/03/21 13:10	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:24	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:14	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1734738	1	09/01/21 20:15	09/04/21 22:30	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/04/21 23:05	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	1	09/06/21 01:33	09/06/21 21:34	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 08:40	AAT	Mt. Juliet, TN



20210827-J17E(SVE01)@35-37' L1397311-02 Solid

Collected by
Parker Coit

Collected date/time
08/27/21 08:40

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:15	09/06/21 18:15	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:02	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:27	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:18	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 02:01	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/04/21 23:23	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	10	09/06/21 01:33	09/06/21 22:52	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 09:40	AAT	Mt. Juliet, TN

20210827-J17E(SVE01)@45-47' L1397311-03 Solid

Collected by
Parker Coit

Collected date/time
08/27/21 08:58

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:18	09/06/21 18:18	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 17:20	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:30	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:21	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 02:24	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/04/21 23:42	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	1	09/06/21 01:33	09/06/21 21:07	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 09:59	AAT	Mt. Juliet, TN

20210827-J17E(SVE01)@55-57' L1397311-04 Solid

Collected by
Parker Coit

Collected date/time
08/27/21 09:28

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:21	09/06/21 18:21	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:12	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:32	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:25	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 02:48	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 00:01	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	5	09/06/21 01:33	09/06/21 22:26	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 10:59	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20210827-J17E(SVE01)@63-65' L1397311-05 Solid

Collected by
Parker Coit

Collected date/time
08/27/21 10:13

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1733671	1	09/06/21 18:24	09/06/21 18:24	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1735559	1	09/06/21 09:21	09/08/21 16:18	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1735788	1	09/06/21 15:18	09/06/21 21:15	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1732899	1	09/01/21 16:16	09/04/21 03:35	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1732894	5	09/01/21 16:08	09/02/21 11:28	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1735597	1	09/01/21 20:15	09/09/21 03:12	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735126	1	09/01/21 20:15	09/05/21 00:20	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1735386	10	09/06/21 01:33	09/06/21 23:44	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1735500	1	09/06/21 22:45	09/07/21 12:18	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.59		1	09/06/2021 18:13	WG1733671

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	09/03/2021 13:10	WG1733822

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.30	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397311-01 WG1735788: 8.3 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	212		0.0852	0.500	1	09/04/2021 03:24	WG1732899
Cadmium	0.397	J	0.0471	0.500	1	09/04/2021 03:24	WG1732899
Nickel	13.6		0.132	2.00	1	09/04/2021 03:24	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:24	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.70		0.100	1.00	5	09/02/2021 11:14	WG1732894

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

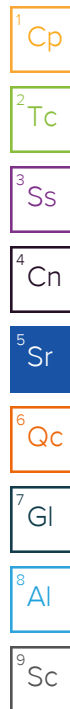
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0445	J	0.0217	0.100	1	09/04/2021 22:30	WG1734738
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	99.1			77.0-120		09/04/2021 22:30	WG1734738

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	0.0111	J5	0.000467	0.00100	1	09/04/2021 23:05	WG1735126
Toluene	0.214	J5	0.00130	0.00500	1	09/04/2021 23:05	WG1735126
Ethylbenzene	0.132	J5	0.000737	0.00250	1	09/04/2021 23:05	WG1735126
Xylenes, Total	1.84	V	0.000880	0.00650	1	09/04/2021 23:05	WG1735126
1,2,4-Trimethylbenzene	0.471	J5	0.00158	0.00500	1	09/04/2021 23:05	WG1735126
1,3,5-Trimethylbenzene	0.492	J5	0.00200	0.00500	1	09/04/2021 23:05	WG1735126
(S) Toluene-d8	112			75.0-131		09/04/2021 23:05	WG1735126
(S) 4-Bromofluorobenzene	97.8			67.0-138		09/04/2021 23:05	WG1735126
(S) 1,2-Dichloroethane-d4	98.4			70.0-130		09/04/2021 23:05	WG1735126

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	21.6		1.61	4.00	1	09/06/2021 21:34	WG1735386
C28-C36 Motor Oil Range	30.4		0.274	4.00	1	09/06/2021 21:34	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	46.5			18.0-148		09/06/2021 21:34	WG1735386

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
Fluorene	U	J3 J5	0.00205	0.00600	1	09/07/2021 08:40	WG1735500
Naphthalene	0.0157	J J3 J5	0.00408	0.0200	1	09/07/2021 08:40	WG1735500
1-Methylnaphthalene	0.0103	J J3	0.00449	0.0200	1	09/07/2021 08:40	WG1735500
2-Methylnaphthalene	0.0266	J3 J5	0.00427	0.0200	1	09/07/2021 08:40	WG1735500
(S) p-Terphenyl-d14	104			23.0-120		09/07/2021 08:40	WG1735500
(S) Nitrobenzene-d5	92.6			14.0-149		09/07/2021 08:40	WG1735500
(S) 2-Fluorobiphenyl	85.4			34.0-125		09/07/2021 08:40	WG1735500

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.40		1	09/06/2021 18:15	WG1733671

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	09/08/2021 16:02	WG1735559

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.58	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397311-02 WG1735788: 8.58 at 20.6C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	307		0.0852	0.500	1	09/04/2021 03:27	WG1732899
Cadmium	0.320	J	0.0471	0.500	1	09/04/2021 03:27	WG1732899
Nickel	12.6		0.132	2.00	1	09/04/2021 03:27	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:27	WG1732899

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	8.47		0.100	1.00	5	09/02/2021 11:18	WG1732894

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

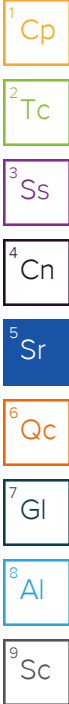
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	4.54		0.0217	0.100	1	09/09/2021 02:01	WG1735597
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	85.7			77.0-120		09/09/2021 02:01	WG1735597

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	0.00960		0.000467	0.00100	1	09/04/2021 23:23	WG1735126
Toluene	0.131		0.00130	0.00500	1	09/04/2021 23:23	WG1735126
Ethylbenzene	0.0769		0.000737	0.00250	1	09/04/2021 23:23	WG1735126
Xylenes, Total	0.779		0.000880	0.00650	1	09/04/2021 23:23	WG1735126
1,2,4-Trimethylbenzene	0.203		0.00158	0.00500	1	09/04/2021 23:23	WG1735126
1,3,5-Trimethylbenzene	0.213		0.00200	0.00500	1	09/04/2021 23:23	WG1735126
(S) <i>Toluene-d8</i>	115			75.0-131		09/04/2021 23:23	WG1735126
(S) <i>4</i> -Bromofluorobenzene	99.2			67.0-138		09/04/2021 23:23	WG1735126
(S) <i>1,2</i> -Dichloroethane- <i>d4</i>	99.0			70.0-130		09/04/2021 23:23	WG1735126

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
C10-C28 Diesel Range	71.6		16.1	40.0	10	09/06/2021 22:52	WG1735386
C28-C36 Motor Oil Range	284		2.74	40.0	10	09/06/2021 22:52	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	72.7			18.0-148		09/06/2021 22:52	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 09:40	WG1735500
Naphthalene	0.00471	J	0.00408	0.0200	1	09/07/2021 09:40	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 09:40	WG1735500
2-Methylnaphthalene	0.00852	J	0.00427	0.0200	1	09/07/2021 09:40	WG1735500
(S) p-Terphenyl-d14	114			23.0-120		09/07/2021 09:40	WG1735500
(S) Nitrobenzene-d5	71.6			14.0-149		09/07/2021 09:40	WG1735500
(S) 2-Fluorobiphenyl	90.9			34.0-125		09/07/2021 09:40	WG1735500

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.15		1	09/06/2021 18:18	WG1733671

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	09/08/2021 17:20	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.34	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397311-03 WG1735788: 8.34 at 20.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	195		0.0852	0.500	1	09/04/2021 03:30	WG1732899
Cadmium	0.422	J	0.0471	0.500	1	09/04/2021 03:30	WG1732899
Nickel	12.5		0.132	2.00	1	09/04/2021 03:30	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:30	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.86		0.100	1.00	5	09/02/2021 11:21	WG1732894

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

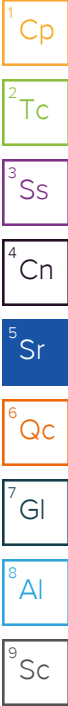
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4.13		0.0217	0.100	1	09/09/2021 02:24	WG1735597
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	82.5			77.0-120		09/09/2021 02:24	WG1735597

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	0.00215		0.000467	0.00100	1	09/04/2021 23:42	WG1735126
Toluene	0.00599		0.00130	0.00500	1	09/04/2021 23:42	WG1735126
Ethylbenzene	0.00683		0.000737	0.00250	1	09/04/2021 23:42	WG1735126
Xylenes, Total	0.0211		0.000880	0.00650	1	09/04/2021 23:42	WG1735126
1,2,4-Trimethylbenzene	0.0113		0.00158	0.00500	1	09/04/2021 23:42	WG1735126
1,3,5-Trimethylbenzene	0.0126		0.00200	0.00500	1	09/04/2021 23:42	WG1735126
(S) <i>Toluene-d8</i>	111			75.0-131		09/04/2021 23:42	WG1735126
(S) <i>4</i> -Bromofluorobenzene	91.8			67.0-138		09/04/2021 23:42	WG1735126
(S) <i>1,2</i> -Dichloroethane-d4	96.1			70.0-130		09/04/2021 23:42	WG1735126

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.46	J	1.61	4.00	1	09/06/2021 21:07	WG1735386
C28-C36 Motor Oil Range	8.69		0.274	4.00	1	09/06/2021 21:07	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	44.1			18.0-148		09/06/2021 21:07	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 09:59	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 09:59	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 09:59	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 09:59	WG1735500
(S) p-Terphenyl-d14	82.9			23.0-120		09/07/2021 09:59	WG1735500
(S) Nitrobenzene-d5	54.3			14.0-149		09/07/2021 09:59	WG1735500
(S) 2-Fluorobiphenyl	69.4			34.0-125		09/07/2021 09:59	WG1735500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.99		1	09/06/2021 18:21	WG1733671

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	09/08/2021 16:12	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.88	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397311-04 WG1735788: 8.88 at 21.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	316		0.0852	0.500	1	09/04/2021 03:32	WG1732899
Cadmium	0.329	J	0.0471	0.500	1	09/04/2021 03:32	WG1732899
Nickel	20.2		0.132	2.00	1	09/04/2021 03:32	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:32	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.59		0.100	1.00	5	09/02/2021 11:25	WG1732894

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

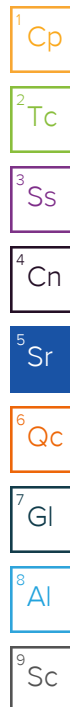
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.18		0.0217	0.100	1	09/09/2021 02:48	WG1735597
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	82.9			77.0-120		09/09/2021 02:48	WG1735597

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	0.00202		0.000467	0.00100	1	09/05/2021 00:01	WG1735126
Toluene	0.00455	J	0.00130	0.00500	1	09/05/2021 00:01	WG1735126
Ethylbenzene	0.00580		0.000737	0.00250	1	09/05/2021 00:01	WG1735126
Xylenes, Total	0.0115		0.000880	0.00650	1	09/05/2021 00:01	WG1735126
1,2,4-Trimethylbenzene	0.00515		0.00158	0.00500	1	09/05/2021 00:01	WG1735126
1,3,5-Trimethylbenzene	0.00613		0.00200	0.00500	1	09/05/2021 00:01	WG1735126
(S) Toluene-d8	112			75.0-131		09/05/2021 00:01	WG1735126
(S) 4-Bromofluorobenzene	92.6			67.0-138		09/05/2021 00:01	WG1735126
(S) 1,2-Dichloroethane-d4	96.7			70.0-130		09/05/2021 00:01	WG1735126

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	46.3		8.05	20.0	5	09/06/2021 22:26	WG1735386
C28-C36 Motor Oil Range	181		1.37	20.0	5	09/06/2021 22:26	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	65.7			18.0-148		09/06/2021 22:26	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 10:59	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 10:59	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 10:59	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 10:59	WG1735500
(S) p-Terphenyl-d14	90.9			23.0-120		09/07/2021 10:59	WG1735500
(S) Nitrobenzene-d5	60.7			14.0-149		09/07/2021 10:59	WG1735500
(S) 2-Fluorobiphenyl	77.3			34.0-125		09/07/2021 10:59	WG1735500

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.26		1	09/06/2021 18:24	WG1733671

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	09/08/2021 16:18	WG1735559

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.51	T8	1	09/06/2021 21:15	WG1735788

Sample Narrative:

L1397311-05 WG1735788: 8.51 at 21C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	259		0.0852	0.500	1	09/04/2021 03:35	WG1732899
Cadmium	0.356	J	0.0471	0.500	1	09/04/2021 03:35	WG1732899
Nickel	18.4		0.132	2.00	1	09/04/2021 03:35	WG1732899
Selenium	U		0.764	2.00	1	09/04/2021 03:35	WG1732899

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.99		0.100	1.00	5	09/02/2021 11:28	WG1732894

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

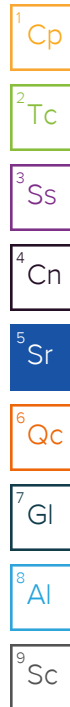
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.899		0.0217	0.100	1	09/09/2021 03:12	WG1735597
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	86.6			77.0-120		09/09/2021 03:12	WG1735597

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	0.000750	J	0.000467	0.00100	1	09/05/2021 00:20	WG1735126
Toluene	0.00260	J	0.00130	0.00500	1	09/05/2021 00:20	WG1735126
Ethylbenzene	0.00150	J	0.000737	0.00250	1	09/05/2021 00:20	WG1735126
Xylenes, Total	0.00428	J	0.000880	0.00650	1	09/05/2021 00:20	WG1735126
1,2,4-Trimethylbenzene	0.00235	J	0.00158	0.00500	1	09/05/2021 00:20	WG1735126
1,3,5-Trimethylbenzene	0.00280	J	0.00200	0.00500	1	09/05/2021 00:20	WG1735126
(S) Toluene-d8	115			75.0-131		09/05/2021 00:20	WG1735126
(S) 4-Bromofluorobenzene	92.3			67.0-138		09/05/2021 00:20	WG1735126
(S) 1,2-Dichloroethane-d4	98.4			70.0-130		09/05/2021 00:20	WG1735126

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	86.6		16.1	40.0	10	09/06/2021 23:44	WG1735386
C28-C36 Motor Oil Range	269		2.74	40.0	10	09/06/2021 23:44	WG1735386



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	65.1			18.0-148		09/06/2021 23:44	WG1735386

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
Fluorene	U		0.00205	0.00600	1	09/07/2021 12:18	WG1735500
Naphthalene	U		0.00408	0.0200	1	09/07/2021 12:18	WG1735500
1-Methylnaphthalene	U		0.00449	0.0200	1	09/07/2021 12:18	WG1735500
2-Methylnaphthalene	U		0.00427	0.0200	1	09/07/2021 12:18	WG1735500
(S) p-Terphenyl-d14	106			23.0-120		09/07/2021 12:18	WG1735500
(S) Nitrobenzene-d5	62.8			14.0-149		09/07/2021 12:18	WG1735500
(S) 2-Fluorobiphenyl	83.0			34.0-125		09/07/2021 12:18	WG1735500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700142-1 09/03/21 11:05

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

L1396428-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1396428-07 09/03/21 11:52 • (DUP) R3700142-3 09/03/21 12:08

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

L1396532-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1396532-06 09/03/21 13:15 • (DUP) R3700142-4 09/03/21 13:20

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

Laboratory Control Sample (LCS)

(LCS) R3700142-2 09/03/21 11:11

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.1	101	80.0-120	

L1396510-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396510-10 09/03/21 13:26 • (MS) R3700142-5 09/03/21 13:31 • (MSD) R3700142-6 09/03/21 13:36

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	20.1	20.3	101	101	1	75.0-125			0.799	20

L1396510-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396510-10 09/03/21 13:26 • (MS) R3700142-7 09/03/21 13:41

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	653	U	638	97.7	50	75.0-125	



Method Blank (MB)

(MB) R3701887-1 09/08/21 15:49

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

L1397311-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1397311-02 09/08/21 16:02 • (DUP) R3701887-3 09/08/21 16:07

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

L1397311-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397311-03 09/08/21 17:20 • (DUP) R3701887-8 09/08/21 17:25

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

Laboratory Control Sample (LCS)

(LCS) R3701887-2 09/08/21 15:57

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

L1397312-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397312-04 09/08/21 16:54 • (MS) R3701887-4 09/08/21 16:59 • (MSD) R3701887-5 09/08/21 17:04

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	19.4	19.4	96.9	96.8	1	75.0-125			0.0686	20

L1397312-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1397312-04 09/08/21 16:54 • (MS) R3701887-6 09/08/21 17:09

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	639	U	622	97.4	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1397311-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397311-03 09/06/21 21:15 • (DUP) R3700842-2 09/06/21 21:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.34	8.32	1	0.240		1

Sample Narrative:

OS: 8.34 at 20.5C

DUP: 8.32 at 20.6C

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3700842-3 09/06/21 21:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte		su		%		%
pH		8.45	1	0.237		1

Sample Narrative:

DUP: 8.45 at 21.1C

Laboratory Control Sample (LCS)

(LCS) R3700842-1 09/06/21 21:15

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

Sample Narrative:

LCS: 10.05 at 24C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700388-1 09/04/21 02:46

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3700388-2 09/04/21 02:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	99.1	99.1	80.0-120	
Nickel	100	99.2	99.2	80.0-120	
Selenium	100	98.1	98.1	80.0-120	

L1396495-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396495-01 09/04/21 02:51 • (MS) R3700388-5 09/04/21 02:59 • (MSD) R3700388-6 09/04/21 03:02

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	198	294	302	95.5	103	1	75.0-125			2.63	20
Nickel	100	20.7	121	114	99.9	93.7	1	75.0-125			5.20	20
Selenium	100	U	104	98.9	104	98.9	1	75.0-125			4.79	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3699508-1 09/02/21 10:23

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) R3699508-2 09/02/21 10:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	87.7	87.7	80.0-120	

L1396495-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396495-01 09/02/21 10:30 • (MS) R3699508-5 09/02/21 10:41 • (MSD) R3699508-6 09/02/21 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 %
Arsenic	100	2.00	92.5	87.2	90.5	85.2	5	75.0-125			5.93	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701403-2 09/04/21 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)	100			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3701403-1 09/04/21 11:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.43	98.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3702151-2 09/09/21 01:37

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

Laboratory Control Sample (LCS)

(LCS) R3702151-1 09/09/21 00:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.88	107	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700905-3 09/04/21 20:51

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	114			75.0-131
(S) 4-Bromofluorobenzene	94.3			67.0-138
(S) 1,2-Dichloroethane-d4	99.9			70.0-130

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

(LCS) R3700905-1 09/04/21 19:34 • (LCSD) R3700905-2 09/04/21 19:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.131	0.126	105	101	70.0-123			3.89	20
Ethylbenzene	0.125	0.135	0.133	108	106	74.0-126			1.49	20
Toluene	0.125	0.131	0.126	105	101	75.0-121			3.89	20
1,2,4-Trimethylbenzene	0.125	0.139	0.135	111	108	70.0-126			2.92	20
1,3,5-Trimethylbenzene	0.125	0.137	0.133	110	106	73.0-127			2.96	20
Xylenes, Total	0.375	0.386	0.372	103	99.2	72.0-127			3.69	20
(S) Toluene-d8				108	107	75.0-131				
(S) 4-Bromofluorobenzene				97.2	94.6	67.0-138				
(S) 1,2-Dichloroethane-d4				107	107	70.0-130				

L1397311-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397311-01 09/04/21 23:05 • (MS) R3700905-4 09/05/21 03:30 • (MSD) R3700905-5 09/05/21 03:49

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.124	0.0111	0.358	0.347	280	271	1	10.0-149	J5	J5	3.12	37
Ethylbenzene	0.124	0.132	1.14	1.09	813	773	1	10.0-160	J5	J5	4.48	38
Toluene	0.124	0.214	2.47	2.36	1820	1730	1	10.0-156	J5	J5	4.55	38
1,2,4-Trimethylbenzene	0.124	0.471	2.60	2.45	1720	1600	1	10.0-160	E J5	J5	5.94	36
1,3,5-Trimethylbenzene	0.124	0.492	2.68	2.49	1760	1610	1	10.0-160	E J5	E J5	7.35	38
Xylenes, Total	0.372	1.84	12.7	12.4	2920	2840	1	10.0-160	V	V	2.39	38
(S) Toluene-d8					98.8	105		75.0-131				
(S) 4-Bromofluorobenzene					97.8	114		67.0-138				
(S) 1,2-Dichloroethane-d4					100	100		70.0-130				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

Method Blank (MB)

(MB) R3700963-1 09/06/21 18:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	69.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3700963-2 09/06/21 18:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.9	79.8	50.0-150	
(S) o-Terphenyl			68.9	18.0-148	

L1396555-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396555-03 09/07/21 23:42 • (MS) R3701429-1 09/07/21 23:55 • (MSD) R3701429-2 09/08/21 00:08

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 %
C10-C28 Diesel Range	47.8	5.67	42.2	42.8	76.4	76.9	1	50.0-150			1.41	20
(S) o-Terphenyl					68.2	72.5		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701160-2 09/07/21 07:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	71.2			14.0-149
(S) 2-Fluorobiphenyl	91.7			34.0-125
(S) p-Terphenyl-d14	114			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3701160-1 09/07/21 06:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0779	97.4	49.0-120	
Naphthalene	0.0800	0.0733	91.6	50.0-120	
1-Methylnaphthalene	0.0800	0.0788	98.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0739	92.4	50.0-120	
(S) Nitrobenzene-d5			80.0	14.0-149	
(S) 2-Fluorobiphenyl			103	34.0-125	
(S) p-Terphenyl-d14			126	23.0-120	J1

L1397311-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397311-01 09/07/21 08:40 • (MS) R3701160-3 09/07/21 09:00 • (MSD) R3701160-4 09/07/21 09:20

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 %
Fluorene	0.0772	U	0.0518	0.215	67.1	276	1	11.0-130		J3 J5	122	29
Naphthalene	0.0772	0.0157	0.0710	0.128	71.6	144	1	10.0-135		J3 J5	57.3	27
1-Methylnaphthalene	0.0772	0.0103	0.0661	0.0937	72.3	107	1	10.0-142		J3	34.5	28
2-Methylnaphthalene	0.0772	0.0266	0.0821	0.182	71.9	199	1	10.0-137		J3 J5	75.7	28
(S) Nitrobenzene-d5					87.5	125		14.0-149				
(S) 2-Fluorobiphenyl					70.7	88.8		34.0-125				
(S) p-Terphenyl-d14					78.9	106		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

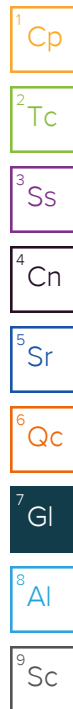
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

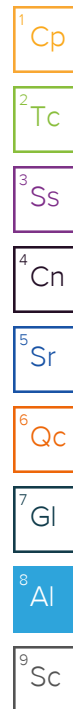
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Billing Information:

Same as above

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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):
Parker Coit

Site/Facility ID #
J17E

P.O. #
J17E

Collected by (signature):

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

Immediately
Packed on Ice N ☐ Y ☒

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	TPH- GRO, DRO, ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methlybenzene, 2-methylbenzene						
20210827-J17E (M/SVE01)	600b	SS		8/27/21	823	2	X	X	X	X	X	X						J01
20210827-J17E (SVE01)	600b	SS			840	2	X	X	X	X	X	X						J02
20210827-J17E (SVE01)	600b	SS			858	2	X	X	X	X	X	X						J03
20210827-J17E (SVE01)	600b	SS			928	2	X	X	X	X	X	X						J04
20210827-J17E (SVE01)	600b	SS			1013	2	X	X	X	X	X	X						J05

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

Remarks:

Analyze under Protection of Groundwater Soil Screening Level Concentrations
Risk Based (R) and MCL Based (M) for all soil samples.

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:

UPS FedEx Courier

Tracking # 8016 1232 0927

Relinquished by: (Signature)

Date:

08/27/21

Time:

1700

Received by: (Signature)

Trip Blank Received: Yes ☒ No ☐
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

8/30/21

Time:

1500

Received by: (Signature)

Temp: 15.5°C Bottles Received: 10

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 8/31/21 Time: 1000

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

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

November 02, 2021

Revised Report

Caerus Oil and Gas

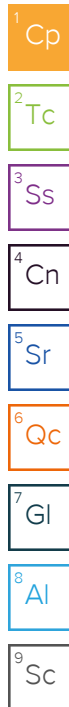
Sample Delivery Group: L1418263
Samples Received: 10/15/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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



Pace Analytical National

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

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SAMPLE SUMMARY

20211014-J17E(SB03)@55-57.5' L1418263-01 Solid

Collected by
DH

Collected date/time
10/14/21 08:30

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 10:59	10/22/21 10:59	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1760652	1	10/20/21 17:40	10/21/21 12:51	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:06	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:13	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760802	1	10/20/21 14:58	10/21/21 16:19	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760766	1	10/20/21 14:58	10/21/21 10:32	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1760442	1	10/21/21 08:41	10/21/21 17:58	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 16:52	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

20211014-J17E(SB03)@65-67.5' L1418263-02 Solid

Collected by
DH

Collected date/time
10/14/21 11:15

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:02	10/22/21 11:02	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1760652	1	10/20/21 17:40	10/21/21 12:56	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:20	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:29	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760802	1	10/20/21 14:58	10/21/21 16:40	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760766	1	10/20/21 14:58	10/21/21 10:51	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1760442	1	10/21/21 08:41	10/21/21 18:12	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 17:10	AAT	Mt. Juliet, TN

⁷Gl

⁸Al

⁹Sc

20211014-J17E(SB03)@67-68.5' L1418263-03 Solid

Collected by
DH

Collected date/time
10/14/21 11:45

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:05	10/22/21 11:05	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1760652	1	10/20/21 17:40	10/21/21 13:01	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759752	1	10/22/21 13:00	10/22/21 15:25	RAF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:23	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:32	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760802	1	10/20/21 14:58	10/21/21 17:02	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760766	1	10/20/21 14:58	10/21/21 11:11	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1760442	1	10/21/21 08:41	10/21/21 18:25	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 17:28	AAT	Mt. Juliet, TN

CASE NARRATIVE

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



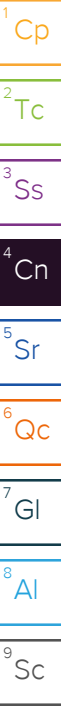
Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 10/27/21 10:29

Project Narrative

Revised to include additional metals.



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.28		1	10/22/2021 10:59	WG1759169

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	10/21/2021 12:51	WG1760652

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.44	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418263-01 WG1759727: 8.44 at 20C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	177		0.0852	0.500	1	10/21/2021 20:06	WG1760886
Cadmium	0.320	J	0.0471	0.500	1	10/21/2021 20:06	WG1760886
Copper	13.3		0.400	2.00	1	10/21/2021 20:06	WG1760886
Nickel	10.3		0.132	2.00	1	10/21/2021 20:06	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:06	WG1760886

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.21		0.100	1.00	5	10/21/2021 18:13	WG1760910

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	0.221		0.0217	0.100	1	10/21/2021 16:19	WG1760802
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	102			77.0-120		10/21/2021 16:19	WG1760802

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	10/21/2021 10:32	WG1760766
Toluene	U		0.00130	0.00500	1	10/21/2021 10:32	WG1760766
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 10:32	WG1760766
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 10:32	WG1760766
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 10:32	WG1760766
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 10:32	WG1760766
(S) Toluene-d8	104			75.0-131		10/21/2021 10:32	WG1760766
(S) 4-Bromofluorobenzene	101			67.0-138		10/21/2021 10:32	WG1760766
(S) 1,2-Dichloroethane-d4	110			70.0-130		10/21/2021 10:32	WG1760766

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	34.6		1.61	4.00	1	10/21/2021 17:58	WG1760442
C28-C36 Motor Oil Range	120		0.274	4.00	1	10/21/2021 17:58	WG1760442
(S) o-Terphenyl	61.9			18.0-148		10/21/2021 17:58	WG1760442

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
Fluorene	U		0.00205	0.00600	1	10/22/2021 16:52	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 16:52	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 16:52	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 16:52	WG1761266
(S) p-Terphenyl-d14	120			23.0-120		10/22/2021 16:52	WG1761266
(S) Nitrobenzene-d5	76.1			14.0-149		10/22/2021 16:52	WG1761266
(S) 2-Fluorobiphenyl	84.2			34.0-125		10/22/2021 16:52	WG1761266

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.79		1	10/22/2021 11:02	WG1759169

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	10/21/2021 12:56	WG1760652

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.24	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418263-02 WG1759727: 8.24 at 19.9C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	540		0.0852	0.500	1	10/21/2021 20:20	WG1760886
Cadmium	0.333	J	0.0471	0.500	1	10/21/2021 20:20	WG1760886
Copper	16.8		0.400	2.00	1	10/21/2021 20:20	WG1760886
Nickel	11.8		0.132	2.00	1	10/21/2021 20:20	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:20	WG1760886

Metals (ICPMS) by Method 6020

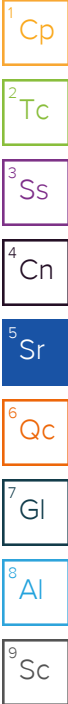
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	6.58		0.100	1.00	5	10/21/2021 18:29	WG1760910

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0380	J	0.0217	0.100	1	10/21/2021 16:40	WG1760802
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	104			77.0-120		10/21/2021 16:40	WG1760802

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100	1	10/21/2021 10:51	WG1760766
Toluene	U		0.00130	0.00500	1	10/21/2021 10:51	WG1760766
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 10:51	WG1760766
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 10:51	WG1760766
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 10:51	WG1760766
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 10:51	WG1760766
(S) Toluene-d8	103			75.0-131		10/21/2021 10:51	WG1760766
(S) 4-Bromofluorobenzene	101			67.0-138		10/21/2021 10:51	WG1760766
(S) 1,2-Dichloroethane-d4	112			70.0-130		10/21/2021 10:51	WG1760766



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	33.5		1.61	4.00	1	10/21/2021 18:12	WG1760442
C28-C36 Motor Oil Range	117		0.274	4.00	1	10/21/2021 18:12	WG1760442
(S) o-Terphenyl	47.0			18.0-148		10/21/2021 18:12	WG1760442

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
Fluorene	U		0.00205	0.00600	1	10/22/2021 17:10	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 17:10	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 17:10	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 17:10	WG1761266
(S) p-Terphenyl-d14	108			23.0-120		10/22/2021 17:10	WG1761266
(S) Nitrobenzene-d5	73.0			14.0-149		10/22/2021 17:10	WG1761266
(S) 2-Fluorobiphenyl	75.8			34.0-125		10/22/2021 17:10	WG1761266

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.68		1	10/22/2021 11:05	WG1759169

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	10/21/2021 13:01	WG1760652

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	T8	1	10/22/2021 15:25	WG1759752

Sample Narrative:

L1418263-03 WG1759752: 8.32 at 19.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	197		0.0852	0.500	1	10/21/2021 20:23	WG1760886
Cadmium	0.606		0.0471	0.500	1	10/21/2021 20:23	WG1760886
Copper	15.6		0.400	2.00	1	10/21/2021 20:23	WG1760886
Nickel	10.5		0.132	2.00	1	10/21/2021 20:23	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:23	WG1760886

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.90		0.100	1.00	5	10/21/2021 18:32	WG1760910

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0354	J	0.0217	0.100	1	10/21/2021 17:02	WG1760802
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	103			77.0-120		10/21/2021 17:02	WG1760802

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	10/21/2021 11:11	WG1760766
Toluene	U		0.00130	0.00500	1	10/21/2021 11:11	WG1760766
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 11:11	WG1760766
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 11:11	WG1760766
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 11:11	WG1760766
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 11:11	WG1760766
(S) Toluene-d8	104			75.0-131		10/21/2021 11:11	WG1760766
(S) 4-Bromofluorobenzene	101			67.0-138		10/21/2021 11:11	WG1760766
(S) 1,2-Dichloroethane-d4	107			70.0-130		10/21/2021 11:11	WG1760766

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	40.5		1.61	4.00	1	10/21/2021 18:25	WG1760442
C28-C36 Motor Oil Range	116		0.274	4.00	1	10/21/2021 18:25	WG1760442
(S) o-Terphenyl	77.0			18.0-148		10/21/2021 18:25	WG1760442

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
Fluorene	U		0.00205	0.00600	1	10/22/2021 17:28	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 17:28	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 17:28	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 17:28	WG1761266
(S) p-Terphenyl-d14	109			23.0-120		10/22/2021 17:28	WG1761266
(S) Nitrobenzene-d5	74.7			14.0-149		10/22/2021 17:28	WG1761266
(S) 2-Fluorobiphenyl	80.8			34.0-125		10/22/2021 17:28	WG1761266

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719702-1 10/21/21 10:37

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

L1418048-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1418048-05 10/21/21 12:20 • (DUP) R3719702-7 10/21/21 12:25

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

L1418667-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1418667-01 10/21/21 13:12 • (DUP) R3719702-8 10/21/21 13:17

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

Laboratory Control Sample (LCS)

(LCS) R3719702-2 10/21/21 10:42

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.7	107	80.0-120	

L1418035-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418035-01 10/21/21 11:17 • (MS) R3719702-3 10/21/21 11:23 • (MSD) R3719702-4 10/21/21 11:28

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	18.5	16.4	92.7	82.0	1	75.0-125			12.2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1417211-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1417211-01 10/22/21 12:00 • (DUP) R3720096-2 10/22/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.82	7.83	1	0.128		1

Sample Narrative:

OS: 7.82 at 20.2C

DUP: 7.83 at 20.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1417784-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1417784-05 10/22/21 12:00 • (DUP) R3720096-3 10/22/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.56	7.57	1	0.132		1

Sample Narrative:

OS: 7.56 at 19.8C

DUP: 7.57 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3720096-1 10/22/21 12:00

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

Sample Narrative:

LCS: 10 at 20.7C

L1418263-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1418263-03 10/22/21 15:25 • (DUP) R3720207-3 10/22/21 15:25

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.32	8.33	1	0.120		1

Sample Narrative:

OS: 8.32 at 19.6C

DUP: 8.33 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3720207-1 10/22/21 15:25

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 19.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719877-1 10/21/21 20:01

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3719877-2 10/21/21 20:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.5	95.5	80.0-120	
Cadmium	100	92.6	92.6	80.0-120	
Copper	100	94.3	94.3	80.0-120	
Nickel	100	95.0	95.0	80.0-120	
Selenium	100	94.3	94.3	80.0-120	

L1418263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418263-01 10/21/21 20:06 • (MS) R3719877-5 10/21/21 20:14 • (MSD) R3719877-6 10/21/21 20:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	177	261	253	83.3	75.4	1	75.0-125			3.09	20
Cadmium	100	0.320	86.3	95.9	85.9	95.6	1	75.0-125			10.6	20
Copper	100	13.3	99.0	107	85.7	93.9	1	75.0-125			7.90	20
Nickel	100	10.3	99.0	108	88.8	97.3	1	75.0-125			8.25	20
Selenium	100	U	83.5	92.6	83.5	92.6	1	75.0-125			10.4	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719749-1 10/21/21 18:06

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) R3719749-2 10/21/21 18:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	89.1	89.1	80.0-120	

L1418263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418263-01 10/21/21 18:13 • (MS) R3719749-5 10/21/21 18:22 • (MSD) R3719749-6 10/21/21 18:25

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 %
Arsenic	100	5.21	86.2	93.4	81.0	88.2	5	75.0-125			8.05	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719963-2 10/21/21 13:47

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)	108			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3719963-1 10/21/21 12:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.79	87.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			96.3	77.0-120	

L1418048-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418048-01 10/21/21 17:23 • (MS) R3719963-3 10/21/21 21:42 • (MSD) R3719963-4 10/21/21 22:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.258	3.09	3.23	51.5	54.0	1	10.0-151			4.43	28
(S) a,a,a-Trifluorotoluene(FID)					96.3	97.8		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3721542-3 10/21/21 06:25

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	99.4			67.0-138
(S) 1,2-Dichloroethane-d4	108			70.0-130

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

(LCS) R3721542-1 10/21/21 05:08 • (LCSD) R3721542-2 10/21/21 05:28

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	0.111	0.111	88.8	88.8	70.0-123			0.000	20
Ethylbenzene	0.125	0.106	0.105	84.8	84.0	74.0-126			0.948	20
Toluene	0.125	0.110	0.113	88.0	90.4	75.0-121			2.69	20
1,2,4-Trimethylbenzene	0.125	0.108	0.108	86.4	86.4	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.113	0.113	90.4	90.4	73.0-127			0.000	20
Xylenes, Total	0.375	0.315	0.318	84.0	84.8	72.0-127			0.948	20
(S) Toluene-d8				102	103	75.0-131				
(S) 4-Bromofluorobenzene				96.9	99.1	67.0-138				
(S) 1,2-Dichloroethane-d4				115	115	70.0-130				

L1418201-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418201-04 10/21/21 12:45 • (MS) R3721542-4 10/21/21 13:04 • (MSD) R3721542-5 10/21/21 13:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.700	0.00812	0.570	0.403	80.3	56.4	8	10.0-149			34.3	37
Ethylbenzene	0.700	0.536	1.07	0.944	76.3	58.3	8	10.0-160			12.5	38
Toluene	0.700	U	0.561	0.412	80.1	58.9	8	10.0-156			30.6	38
1,2,4-Trimethylbenzene	0.700	0.938	1.57	1.38	90.3	63.1	8	10.0-160			12.9	36
1,3,5-Trimethylbenzene	0.700	0.189	0.813	0.612	89.1	60.4	8	10.0-160			28.2	38
Xylenes, Total	2.10	0.218	1.88	1.45	79.1	58.7	8	10.0-160			25.8	38
(S) Toluene-d8					100	104		75.0-131				
(S) 4-Bromofluorobenzene					103	107		67.0-138				
(S) 1,2-Dichloroethane-d4					119	118		70.0-130				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3719659-1 10/21/21 11:37

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	64.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3719659-2 10/21/21 11:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.4	74.8	50.0-150	
(S) o-Terphenyl			68.2	18.0-148	

L1418133-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418133-08 10/21/21 12:57 • (MS) R3719659-3 10/21/21 13:11 • (MSD) R3719659-4 10/21/21 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	49.2	2.52	44.3	40.7	84.9	76.7	1	50.0-150			8.47	20
(S) o-Terphenyl					74.8	63.7		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720381-2 10/22/21 16:34

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Fluorene	U		0.00205	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	91.7			14.0-149
(S) 2-Fluorobiphenyl	101			34.0-125
(S) p-Terphenyl-d14	145	J1		23.0-120

Laboratory Control Sample (LCS)

(LCS) R3720381-1 10/22/21 16:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0654	81.8	49.0-120	
Naphthalene	0.0800	0.0678	84.8	50.0-120	
1-Methylnaphthalene	0.0800	0.0683	85.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0647	80.9	50.0-120	
(S) Nitrobenzene-d5			85.1	14.0-149	
(S) 2-Fluorobiphenyl			87.6	34.0-125	
(S) p-Terphenyl-d14			125	23.0-120	J1

L1418451-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418451-01 10/22/21 17:45 • (MS) R3720381-3 10/22/21 18:03 • (MSD) R3720381-4 10/22/21 18:21

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 %
Fluorene	0.0788	U	0.0603	0.0567	76.5	72.3	1	11.0-130			6.15	29
Naphthalene	0.0788	U	0.0604	0.0570	76.6	72.7	1	10.0-135			5.79	27
1-Methylnaphthalene	0.0788	U	0.0619	0.0582	78.6	74.2	1	10.0-142			6.16	28
2-Methylnaphthalene	0.0788	U	0.0635	0.0551	80.6	70.3	1	10.0-137			14.2	28
(S) Nitrobenzene-d5					83.9	80.3		14.0-149				
(S) 2-Fluorobiphenyl					88.8	90.1		34.0-125				
(S) p-Terphenyl-d14					115	115		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

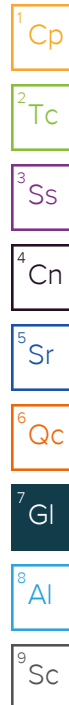
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



[illegible]

October 27, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1418667
Samples Received: 10/15/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

Pace Analytical National

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

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

SAMPLE SUMMARY

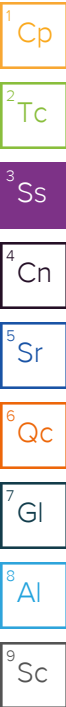
20211013-J17E(SB03)@5-7' L1418667-01 Solid

Collected by
Dustin H.

Collected date/time
10/13/21 10:40

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:26	10/22/21 11:26	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1760652	1	10/20/21 17:40	10/21/21 13:12	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759752	1	10/22/21 13:00	10/22/21 15:25	RAF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760208	1	10/20/21 10:31	10/20/21 18:19	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760211	5	10/20/21 10:34	10/20/21 15:47	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1762535	1	10/20/21 18:47	10/25/21 15:23	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760903	1	10/20/21 18:47	10/21/21 17:58	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 20:22	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 21:36	AAT	Mt. Juliet, TN



20211013-J17E(SB03)@15-17' L1418667-02 Solid

Collected by
Dustin H.

Collected date/time
10/13/21 11:15

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:29	10/22/21 11:29	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1760652	1	10/20/21 17:40	10/21/21 13:22	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760208	1	10/20/21 10:31	10/20/21 18:22	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760211	5	10/20/21 10:34	10/20/21 15:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 18:47	10/21/21 14:19	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760903	1	10/20/21 18:47	10/21/21 18:17	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 20:35	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 21:54	AAT	Mt. Juliet, TN

20211013-J17E(SB03)@25-27' L1418667-03 Solid

Collected by
Dustin H.

Collected date/time
10/13/21 12:10

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:32	10/22/21 11:32	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:10	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760208	1	10/20/21 10:31	10/20/21 18:25	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760211	5	10/20/21 10:34	10/20/21 15:54	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 18:47	10/21/21 14:43	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760903	1	10/20/21 18:47	10/21/21 18:36	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 20:48	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 22:11	AAT	Mt. Juliet, TN

20211013-J17E(SB03)@35-37' L1418667-04 Solid

Collected by
Dustin H.

Collected date/time
10/13/21 13:45

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:35	10/22/21 11:35	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:15	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760208	1	10/20/21 10:31	10/20/21 18:28	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760211	5	10/20/21 10:34	10/20/21 15:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 18:47	10/21/21 15:06	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1760903	1	10/20/21 18:47	10/21/21 18:55	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 21:01	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 22:29	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20211013-J17E(SB03)@45-46.5' L1418667-05 Solid

Collected by
Dustin H.

Collected date/time
10/13/21 15:05

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:37	10/22/21 11:37	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:20	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759752	1	10/22/21 13:00	10/22/21 15:25	RAF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760208	1	10/20/21 10:31	10/20/21 18:31	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760211	5	10/20/21 10:34	10/20/21 16:01	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1.01	10/20/21 18:47	10/21/21 15:30	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 18:47	10/21/21 17:37	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	5	10/23/21 12:57	10/24/21 21:26	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 22:47	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.32		1	10/22/2021 11:26	WG1759169

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	10/21/2021 13:12	WG1760652

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.54	T8	1	10/22/2021 15:25	WG1759752

Sample Narrative:

L1418667-01 WG1759752: 8.54 at 19.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	270		0.0852	0.500	1	10/20/2021 18:19	WG1760208
Cadmium	0.386	J	0.0471	0.500	1	10/20/2021 18:19	WG1760208
Nickel	13.0		0.132	2.00	1	10/20/2021 18:19	WG1760208
Selenium	U		0.764	2.00	1	10/20/2021 18:19	WG1760208

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.19		0.100	1.00	5	10/20/2021 15:47	WG1760211

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

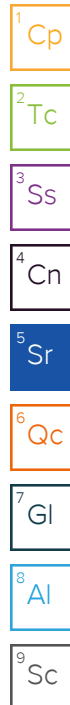
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0758	J	0.0217	0.100	1	10/25/2021 15:23	WG1762535
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.8			62.0-128		10/25/2021 15:23	WG1762535

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	J3	0.000467	0.00100	1	10/21/2021 17:58	WG1760903
Toluene	U	J3	0.00130	0.00500	1	10/21/2021 17:58	WG1760903
Ethylbenzene	U	J3	0.000737	0.00250	1	10/21/2021 17:58	WG1760903
Xylenes, Total	0.00110	J J3	0.000880	0.00650	1	10/21/2021 17:58	WG1760903
1,2,4-Trimethylbenzene	U	J3	0.00158	0.00500	1	10/21/2021 17:58	WG1760903
1,3,5-Trimethylbenzene	U	J3	0.00200	0.00500	1	10/21/2021 17:58	WG1760903
(S) Toluene-d8	108			75.0-131		10/21/2021 17:58	WG1760903
(S) 4-Bromofluorobenzene	96.4			67.0-138		10/21/2021 17:58	WG1760903
(S) 1,2-Dichloroethane-d4	98.6			70.0-130		10/21/2021 17:58	WG1760903

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	13.9		1.61	4.00	1	10/24/2021 20:22	WG1761817
C28-C36 Motor Oil Range	45.3		0.274	4.00	1	10/24/2021 20:22	WG1761817



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	86.2			18.0-148		10/24/2021 20:22	WG1761817

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	10/22/2021 21:36	WG1761266
Acenaphthene	U		0.00209	0.00600	1	10/22/2021 21:36	WG1761266
Acenaphthylene	U		0.00216	0.00600	1	10/22/2021 21:36	WG1761266
Benzo(a)anthracene	U		0.00173	0.00600	1	10/22/2021 21:36	WG1761266
Benzo(a)pyrene	U		0.00179	0.00600	1	10/22/2021 21:36	WG1761266
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/22/2021 21:36	WG1761266
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/22/2021 21:36	WG1761266
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/22/2021 21:36	WG1761266
Chrysene	U		0.00232	0.00600	1	10/22/2021 21:36	WG1761266
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/22/2021 21:36	WG1761266
Fluoranthene	U		0.00227	0.00600	1	10/22/2021 21:36	WG1761266
Fluorene	U		0.00205	0.00600	1	10/22/2021 21:36	WG1761266
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/22/2021 21:36	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 21:36	WG1761266
Phenanthrene	U		0.00231	0.00600	1	10/22/2021 21:36	WG1761266
Pyrene	U		0.00200	0.00600	1	10/22/2021 21:36	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 21:36	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 21:36	WG1761266
2-Chloronaphthalene	U		0.00466	0.0200	1	10/22/2021 21:36	WG1761266
(S) p-Terphenyl-d14	93.4			23.0-120		10/22/2021 21:36	WG1761266
(S) Nitrobenzene-d5	54.1			14.0-149		10/22/2021 21:36	WG1761266
(S) 2-Fluorobiphenyl	69.0			34.0-125		10/22/2021 21:36	WG1761266

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.03		1	10/22/2021 11:29	WG1759169

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	10/21/2021 13:22	WG1760652

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.63	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418667-02 WG1759727: 8.63 at 19.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	233		0.0852	0.500	1	10/20/2021 18:22	WG1760208
Cadmium	0.417	J	0.0471	0.500	1	10/20/2021 18:22	WG1760208
Nickel	11.6		0.132	2.00	1	10/20/2021 18:22	WG1760208
Selenium	U		0.764	2.00	1	10/20/2021 18:22	WG1760208

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.9		0.100	1.00	5	10/20/2021 15:51	WG1760211

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	0.0844	B J	0.0217	0.100	1	10/21/2021 14:19	WG1760784
(S) a,a,a-Trifluorotoluene(FID)	93.2			77.0-120		10/21/2021 14:19	WG1760784

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	10/21/2021 18:17	WG1760903
Toluene	U		0.00130	0.00500	1	10/21/2021 18:17	WG1760903
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 18:17	WG1760903
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 18:17	WG1760903
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 18:17	WG1760903
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 18:17	WG1760903
(S) Toluene-d8	108			75.0-131		10/21/2021 18:17	WG1760903
(S) 4-Bromofluorobenzene	95.8			67.0-138		10/21/2021 18:17	WG1760903
(S) 1,2-Dichloroethane-d4	96.1			70.0-130		10/21/2021 18:17	WG1760903

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	17.7		1.61	4.00	1	10/24/2021 20:35	WG1761817
C28-C36 Motor Oil Range	48.6		0.274	4.00	1	10/24/2021 20:35	WG1761817

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	97.0			18.0-148		10/24/2021 20:35	WG1761817

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	10/22/2021 21:54	WG1761266
Acenaphthene	U		0.00209	0.00600	1	10/22/2021 21:54	WG1761266
Acenaphthylene	U		0.00216	0.00600	1	10/22/2021 21:54	WG1761266
Benzo(a)anthracene	U		0.00173	0.00600	1	10/22/2021 21:54	WG1761266
Benzo(a)pyrene	U		0.00179	0.00600	1	10/22/2021 21:54	WG1761266
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/22/2021 21:54	WG1761266
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/22/2021 21:54	WG1761266
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/22/2021 21:54	WG1761266
Chrysene	U		0.00232	0.00600	1	10/22/2021 21:54	WG1761266
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/22/2021 21:54	WG1761266
Fluoranthene	U		0.00227	0.00600	1	10/22/2021 21:54	WG1761266
Fluorene	U		0.00205	0.00600	1	10/22/2021 21:54	WG1761266
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/22/2021 21:54	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 21:54	WG1761266
Phenanthrene	U		0.00231	0.00600	1	10/22/2021 21:54	WG1761266
Pyrene	U		0.00200	0.00600	1	10/22/2021 21:54	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 21:54	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 21:54	WG1761266
2-Chloronaphthalene	U		0.00466	0.0200	1	10/22/2021 21:54	WG1761266
(S) p-Terphenyl-d14	118			23.0-120		10/22/2021 21:54	WG1761266
(S) Nitrobenzene-d5	74.7			14.0-149		10/22/2021 21:54	WG1761266
(S) 2-Fluorobiphenyl	86.8			34.0-125		10/22/2021 21:54	WG1761266

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.825		1	10/22/2021 11:32	WG1759169

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	10/22/2021 13:10	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418667-03 WG1759727: 8.32 at 19.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	151		0.0852	0.500	1	10/20/2021 18:25	WG1760208
Cadmium	0.575		0.0471	0.500	1	10/20/2021 18:25	WG1760208
Nickel	15.8		0.132	2.00	1	10/20/2021 18:25	WG1760208
Selenium	U		0.764	2.00	1	10/20/2021 18:25	WG1760208

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.38		0.100	1.00	5	10/20/2021 15:54	WG1760211

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

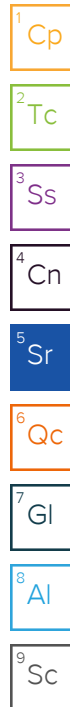
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.105	B	0.0217	0.100	1	10/21/2021 14:43	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.8			77.0-120		10/21/2021 14:43	WG1760784

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	10/21/2021 18:36	WG1760903
Toluene	U		0.00130	0.00500	1	10/21/2021 18:36	WG1760903
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 18:36	WG1760903
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 18:36	WG1760903
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 18:36	WG1760903
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 18:36	WG1760903
(S) Toluene-d8	114			75.0-131		10/21/2021 18:36	WG1760903
(S) 4-Bromofluorobenzene	98.4			67.0-138		10/21/2021 18:36	WG1760903
(S) 1,2-Dichloroethane-d4	102			70.0-130		10/21/2021 18:36	WG1760903

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	9.18		1.61	4.00	1	10/24/2021 20:48	WG1761817
C28-C36 Motor Oil Range	44.5		0.274	4.00	1	10/24/2021 20:48	WG1761817



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	80.5			18.0-148		10/24/2021 20:48	WG1761817

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	10/22/2021 22:11	WG1761266
Acenaphthene	U		0.00209	0.00600	1	10/22/2021 22:11	WG1761266
Acenaphthylene	U		0.00216	0.00600	1	10/22/2021 22:11	WG1761266
Benzo(a)anthracene	U		0.00173	0.00600	1	10/22/2021 22:11	WG1761266
Benzo(a)pyrene	U		0.00179	0.00600	1	10/22/2021 22:11	WG1761266
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/22/2021 22:11	WG1761266
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/22/2021 22:11	WG1761266
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/22/2021 22:11	WG1761266
Chrysene	U		0.00232	0.00600	1	10/22/2021 22:11	WG1761266
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/22/2021 22:11	WG1761266
Fluoranthene	U		0.00227	0.00600	1	10/22/2021 22:11	WG1761266
Fluorene	U		0.00205	0.00600	1	10/22/2021 22:11	WG1761266
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/22/2021 22:11	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 22:11	WG1761266
Phenanthrene	U		0.00231	0.00600	1	10/22/2021 22:11	WG1761266
Pyrene	U		0.00200	0.00600	1	10/22/2021 22:11	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 22:11	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 22:11	WG1761266
2-Chloronaphthalene	U		0.00466	0.0200	1	10/22/2021 22:11	WG1761266
(S) p-Terphenyl-d14	116			23.0-120		10/22/2021 22:11	WG1761266
(S) Nitrobenzene-d5	75.8			14.0-149		10/22/2021 22:11	WG1761266
(S) 2-Fluorobiphenyl	83.1			34.0-125		10/22/2021 22:11	WG1761266

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.47		1	10/22/2021 11:35	WG1759169

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	10/22/2021 13:15	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.62	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418667-04 WG1759727: 8.62 at 20.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	522		0.0852	0.500	1	10/20/2021 18:28	WG1760208
Cadmium	0.412	J	0.0471	0.500	1	10/20/2021 18:28	WG1760208
Nickel	13.4		0.132	2.00	1	10/20/2021 18:28	WG1760208
Selenium	U		0.764	2.00	1	10/20/2021 18:28	WG1760208

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.39		0.100	1.00	5	10/20/2021 15:58	WG1760211

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

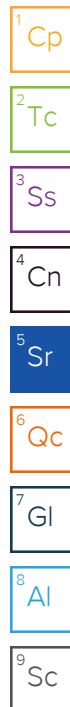
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0869	B J	0.0217	0.100	1	10/21/2021 15:06	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.1			77.0-120		10/21/2021 15:06	WG1760784

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	10/21/2021 18:55	WG1760903
Toluene	U		0.00130	0.00500	1	10/21/2021 18:55	WG1760903
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 18:55	WG1760903
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 18:55	WG1760903
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 18:55	WG1760903
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 18:55	WG1760903
(S) Toluene-d8	112			75.0-131		10/21/2021 18:55	WG1760903
(S) 4-Bromofluorobenzene	99.7			67.0-138		10/21/2021 18:55	WG1760903
(S) 1,2-Dichloroethane-d4	97.7			70.0-130		10/21/2021 18:55	WG1760903

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	9.88		1.61	4.00	1	10/24/2021 21:01	WG1761817
C28-C36 Motor Oil Range	55.1		0.274	4.00	1	10/24/2021 21:01	WG1761817



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	83.6			18.0-148		10/24/2021 21:01	WG1761817

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	10/22/2021 22:29	WG1761266
Acenaphthene	U		0.00209	0.00600	1	10/22/2021 22:29	WG1761266
Acenaphthylene	U		0.00216	0.00600	1	10/22/2021 22:29	WG1761266
Benzo(a)anthracene	U		0.00173	0.00600	1	10/22/2021 22:29	WG1761266
Benzo(a)pyrene	U		0.00179	0.00600	1	10/22/2021 22:29	WG1761266
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/22/2021 22:29	WG1761266
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/22/2021 22:29	WG1761266
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/22/2021 22:29	WG1761266
Chrysene	U		0.00232	0.00600	1	10/22/2021 22:29	WG1761266
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/22/2021 22:29	WG1761266
Fluoranthene	U		0.00227	0.00600	1	10/22/2021 22:29	WG1761266
Fluorene	U		0.00205	0.00600	1	10/22/2021 22:29	WG1761266
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/22/2021 22:29	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 22:29	WG1761266
Phenanthrene	U		0.00231	0.00600	1	10/22/2021 22:29	WG1761266
Pyrene	U		0.00200	0.00600	1	10/22/2021 22:29	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 22:29	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 22:29	WG1761266
2-Chloronaphthalene	U		0.00466	0.0200	1	10/22/2021 22:29	WG1761266
(S) p-Terphenyl-d14	120			23.0-120		10/22/2021 22:29	WG1761266
(S) Nitrobenzene-d5	75.4			14.0-149		10/22/2021 22:29	WG1761266
(S) 2-Fluorobiphenyl	88.1			34.0-125		10/22/2021 22:29	WG1761266

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.32		1	10/22/2021 11:37	WG1759169

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	10/22/2021 13:20	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83	T8	1	10/22/2021 15:25	WG1759752

Sample Narrative:

L1418667-05 WG1759752: 8.83 at 19.4C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	237		0.0852	0.500	1	10/20/2021 18:31	WG1760208
Cadmium	0.333	J	0.0471	0.500	1	10/20/2021 18:31	WG1760208
Nickel	14.8		0.132	2.00	1	10/20/2021 18:31	WG1760208
Selenium	U		0.764	2.00	1	10/20/2021 18:31	WG1760208

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	17.4		0.100	1.00	5	10/20/2021 16:01	WG1760211

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

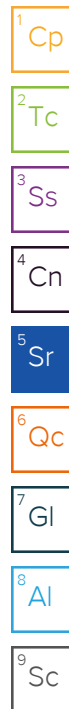
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0784	B J	0.0219	0.101	1.01	10/21/2021 15:30	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	90.8			77.0-120		10/21/2021 15:30	WG1760784

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	10/21/2021 17:37	WG1761264
Toluene	U		0.00130	0.00500	1	10/21/2021 17:37	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 17:37	WG1761264
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 17:37	WG1761264
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 17:37	WG1761264
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 17:37	WG1761264
(S) Toluene-d8	103			75.0-131		10/21/2021 17:37	WG1761264
(S) 4-Bromofluorobenzene	89.9			67.0-138		10/21/2021 17:37	WG1761264
(S) 1,2-Dichloroethane-d4	102			70.0-130		10/21/2021 17:37	WG1761264

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	39.9		8.05	20.0	5	10/24/2021 21:26	WG1761817
C28-C36 Motor Oil Range	180		1.37	20.0	5	10/24/2021 21:26	WG1761817



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	79.8			18.0-148		10/24/2021 21:26	WG1761817

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	10/22/2021 22:47	WG1761266
Acenaphthene	U		0.00209	0.00600	1	10/22/2021 22:47	WG1761266
Acenaphthylene	U		0.00216	0.00600	1	10/22/2021 22:47	WG1761266
Benzo(a)anthracene	U		0.00173	0.00600	1	10/22/2021 22:47	WG1761266
Benzo(a)pyrene	U		0.00179	0.00600	1	10/22/2021 22:47	WG1761266
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/22/2021 22:47	WG1761266
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/22/2021 22:47	WG1761266
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/22/2021 22:47	WG1761266
Chrysene	U		0.00232	0.00600	1	10/22/2021 22:47	WG1761266
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/22/2021 22:47	WG1761266
Fluoranthene	U		0.00227	0.00600	1	10/22/2021 22:47	WG1761266
Fluorene	U		0.00205	0.00600	1	10/22/2021 22:47	WG1761266
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/22/2021 22:47	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 22:47	WG1761266
Phenanthrene	U		0.00231	0.00600	1	10/22/2021 22:47	WG1761266
Pyrene	U		0.00200	0.00600	1	10/22/2021 22:47	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 22:47	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 22:47	WG1761266
2-Chloronaphthalene	U		0.00466	0.0200	1	10/22/2021 22:47	WG1761266
(S) p-Terphenyl-d14	116			23.0-120		10/22/2021 22:47	WG1761266
(S) Nitrobenzene-d5	72.8			14.0-149		10/22/2021 22:47	WG1761266
(S) 2-Fluorobiphenyl	80.2			34.0-125		10/22/2021 22:47	WG1761266

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Method Blank (MB)

(MB) R3719702-1 10/21/21 10:37

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

L1418048-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1418048-05 10/21/21 12:20 • (DUP) R3719702-7 10/21/21 12:25

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

L1418667-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1418667-01 10/21/21 13:12 • (DUP) R3719702-8 10/21/21 13:17

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

Laboratory Control Sample (LCS)

(LCS) R3719702-2 10/21/21 10:42

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.7	107	80.0-120	

L1418035-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418035-01 10/21/21 11:17 • (MS) R3719702-3 10/21/21 11:23 • (MSD) R3719702-4 10/21/21 11:28

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	18.5	16.4	92.7	82.0	1	75.0-125			12.2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720240-1 10/22/21 12:52

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

L1418667-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1418667-05 10/22/21 13:20 • (DUP) R3720240-3 10/22/21 13:26

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

L1419731-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1419731-06 10/22/21 15:09 • (DUP) R3720240-8 10/22/21 15:15

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	20.7	8.61	1	82.6	J3	20

Laboratory Control Sample (LCS)

(LCS) R3720240-2 10/22/21 13:00

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	

L1419731-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1419731-01 10/22/21 14:12 • (MS) R3720240-4 10/22/21 14:18 • (MSD) R3720240-5 10/22/21 14:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	0.443	17.6	18.7	85.7	91.1	1	75.0-125			5.95	20

L1419731-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1419731-01 10/22/21 14:12 • (MS) R3720240-6 10/22/21 14:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	703	0.443	775	110	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1417211-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1417211-01 10/22/21 12:00 • (DUP) R3720096-2 10/22/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.82	7.83	1	0.128		1

Sample Narrative:
OS: 7.82 at 20.2C
DUP: 7.83 at 20.4C

L1417784-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1417784-05 10/22/21 12:00 • (DUP) R3720096-3 10/22/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.56	7.57	1	0.132		1

Sample Narrative:
OS: 7.56 at 19.8C
DUP: 7.57 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3720096-1 10/22/21 12:00

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

Sample Narrative:
LCS: 10 at 20.7C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1418263-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1418263-03 10/22/21 15:25 • (DUP) R3720207-3 10/22/21 15:25

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.32	8.33	1	0.120		1

Sample Narrative:

OS: 8.32 at 19.6C

DUP: 8.33 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3720207-1 10/22/21 15:25

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 19.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719212-1 10/20/21 17:09

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
Nickel	0.139	J	0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3719212-2 10/20/21 17:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	102	102	80.0-120	
Cadmium	100	98.7	98.7	80.0-120	
Nickel	100	99.1	99.1	80.0-120	
Selenium	100	98.3	98.3	80.0-120	

L1418083-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418083-01 10/20/21 17:15 • (MS) R3719212-5 10/20/21 17:23 • (MSD) R3719212-6 10/20/21 17:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	351	337	488	0.000	137	1	75.0-125	J6	J3 J5	36.6	20
Cadmium	100	0.422	91.1	92.3	90.7	91.9	1	75.0-125			1.32	20
Nickel	100	12.7	99.4	108	86.7	94.9	1	75.0-125			7.84	20
Selenium	100	U	92.3	93.2	92.3	93.2	1	75.0-125			0.953	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3719041-1 10/20/21 14:26

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) R3719041-2 10/20/21 14:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	99.7	99.7	80.0-120	

L1418083-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418083-01 10/20/21 14:32 • (MS) R3719041-5 10/20/21 14:42 • (MSD) R3719041-6 10/20/21 14:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	8.30	95.9	98.9	87.6	90.6	5	75.0-125			3.08	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719931-2 10/21/21 08:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0245	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	96.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3719931-1 10/21/21 07:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.42	80.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			97.2	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3721267-3 10/25/21 13:00

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

Laboratory Control Sample (LCS)

(LCS) R3721267-2 10/25/21 12:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.97	90.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3721627-3 10/21/21 10:28

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	110			75.0-131
(S) 4-Bromofluorobenzene	102			67.0-138
(S) 1,2-Dichloroethane-d4	101			70.0-130

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

(LCS) R3721627-1 10/21/21 02:49 • (LCSD) R3721627-2 10/21/21 03:08

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	0.111	0.115	88.8	92.0	70.0-123			3.54	20
Ethylbenzene	0.125	0.113	0.120	90.4	96.0	74.0-126			6.01	20
Toluene	0.125	0.116	0.120	92.8	96.0	75.0-121			3.39	20
1,2,4-Trimethylbenzene	0.125	0.122	0.126	97.6	101	70.0-126			3.23	20
1,3,5-Trimethylbenzene	0.125	0.124	0.124	99.2	99.2	73.0-127			0.000	20
Xylenes, Total	0.375	0.339	0.355	90.4	94.7	72.0-127			4.61	20
(S) Toluene-d8				109	108	75.0-131				
(S) 4-Bromofluorobenzene				92.6	94.5	67.0-138				
(S) 1,2-Dichloroethane-d4				107	105	70.0-130				

L1418667-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418667-01 10/21/21 17:58 • (MS) R3721627-4 10/21/21 19:14 • (MSD) R3721627-5 10/21/21 19:33

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	0.112	0.0587	89.6	47.0	1	10.0-149		J3	62.4	37
Ethylbenzene	0.125	U	0.119	0.0551	95.2	44.1	1	10.0-160		J3	73.4	38
Toluene	0.125	U	0.121	0.0594	96.8	47.5	1	10.0-156		J3	68.3	38
1,2,4-Trimethylbenzene	0.125	U	0.127	0.0706	102	56.5	1	10.0-160		J3	57.1	36
1,3,5-Trimethylbenzene	0.125	U	0.125	0.0622	100	49.8	1	10.0-160		J3	67.1	38
Xylenes, Total	0.375	0.00110	0.356	0.179	94.6	47.4	1	10.0-160		J3	66.2	38
(S) Toluene-d8					106	107		75.0-131				
(S) 4-Bromofluorobenzene					98.9	95.3		67.0-138				
(S) 1,2-Dichloroethane-d4					98.3	101		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719936-2 10/21/21 11:42

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	91.7			67.0-138
(S) 1,2-Dichloroethane-d4	109			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3719936-1 10/21/21 10:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.114	91.2	70.0-123	
Ethylbenzene	0.125	0.109	87.2	74.0-126	
Toluene	0.125	0.110	88.0	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.109	87.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.116	92.8	73.0-127	
Xylenes, Total	0.375	0.327	87.2	72.0-127	
(S) Toluene-d8			102	75.0-131	
(S) 4-Bromofluorobenzene			94.6	67.0-138	
(S) 1,2-Dichloroethane-d4			111	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720724-1 10/24/21 17:08

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	90.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3720724-2 10/24/21 17:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.3	70.6	50.0-150	
(S) o-Terphenyl			95.2	18.0-148	

L1418698-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418698-03 10/24/21 18:52 • (MS) R3720724-3 10/24/21 18:13 • (MSD) R3720724-4 10/24/21 18:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.2	U	45.5	43.3	92.5	88.0	1	50.0-150			4.95	20
(S) o-Terphenyl					112	105		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720381-2 10/22/21 16:34

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	101			34.0-125
(S) p-Terphenyl-d14	145	J1		23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3720381-1 10/22/21 16:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0698	87.3	50.0-126	
Acenaphthene	0.0800	0.0694	86.8	50.0-120	
Acenaphthylene	0.0800	0.0606	75.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0658	82.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0623	77.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0683	85.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0662	82.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0680	85.0	49.0-125	
Chrysene	0.0800	0.0694	86.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0690	86.3	47.0-125	
Fluoranthene	0.0800	0.0723	90.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3720381-1 10/22/21 16:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0654	81.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0694	86.8	46.0-125	
Naphthalene	0.0800	0.0678	84.8	50.0-120	
Phenanthrene	0.0800	0.0691	86.4	47.0-120	
Pyrene	0.0800	0.0691	86.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0683	85.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0647	80.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0680	85.0	50.0-120	
(S) Nitrobenzene-d5			85.1	14.0-149	
(S) 2-Fluorobiphenyl			87.6	34.0-125	
(S) p-Terphenyl-d14			125	23.0-120	J1

L1418451-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418451-01 10/22/21 17:45 • (MS) R3720381-3 10/22/21 18:03 • (MSD) R3720381-4 10/22/21 18:21

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 %
Anthracene	0.0788	U	0.0624	0.0584	79.2	74.5	1	10.0-145			6.62	30
Acenaphthene	0.0788	U	0.0623	0.0592	79.1	75.5	1	14.0-127			5.10	27
Acenaphthylene	0.0788	U	0.0581	0.0545	73.7	69.5	1	21.0-124			6.39	25
Benzo(a)anthracene	0.0788	U	0.0588	0.0541	74.6	69.0	1	10.0-139			8.33	30
Benzo(a)pyrene	0.0788	U	0.0582	0.0548	73.9	69.9	1	10.0-141			6.02	31
Benzo(b)fluoranthene	0.0788	U	0.0557	0.0514	70.7	65.6	1	10.0-140			8.03	36
Benzo(g,h,i)perylene	0.0788	U	0.0573	0.0543	72.7	69.3	1	10.0-140			5.38	33
Benzo(k)fluoranthene	0.0788	U	0.0589	0.0560	74.7	71.4	1	10.0-137			5.05	31
Chrysene	0.0788	U	0.0620	0.0598	78.7	76.3	1	10.0-145			3.61	30
Dibenz(a,h)anthracene	0.0788	U	0.0608	0.0580	77.2	74.0	1	10.0-132			4.71	31
Fluoranthene	0.0788	U	0.0629	0.0584	79.8	74.5	1	10.0-153			7.42	33
Fluorene	0.0788	U	0.0603	0.0567	76.5	72.3	1	11.0-130			6.15	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0593	0.0557	75.3	71.0	1	10.0-137			6.26	32
Naphthalene	0.0788	U	0.0604	0.0570	76.6	72.7	1	10.0-135			5.79	27
Phenanthrene	0.0788	U	0.0615	0.0562	78.0	71.7	1	10.0-144			9.01	31
Pyrene	0.0788	U	0.0570	0.0538	72.3	68.6	1	10.0-148			5.78	35
1-Methylnaphthalene	0.0788	U	0.0619	0.0582	78.6	74.2	1	10.0-142			6.16	28
2-Methylnaphthalene	0.0788	U	0.0635	0.0551	80.6	70.3	1	10.0-137			14.2	28
2-Chloronaphthalene	0.0788	U	0.0608	0.0584	77.2	74.5	1	29.0-120			4.03	24
(S) Nitrobenzene-d5					83.9	80.3		14.0-149				
(S) 2-Fluorobiphenyl					88.8	90.1		34.0-125				
(S) p-Terphenyl-d14					115	115		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

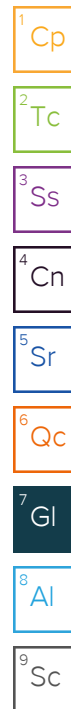
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



[illegible]

May 04, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1344936
Samples Received: 04/28/2021
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

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

Pace Analytical National

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

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

SAMPLE SUMMARY

20210427-J17E (MW02) L1344936-01 GW

Collected by
Dustin H.

Collected date/time
04/27/21 10:40

Received date/time
04/28/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1662229	1	04/30/21 16:17	04/30/21 17:35	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1662352	1	05/02/21 16:57	05/02/21 16:57	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1661074	1	04/30/21 02:42	04/30/21 02:42	ADM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	910		20.0	1	04/30/2021 17:35	WG1662229

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.81		0.379	1.00	1	05/02/2021 16:57	WG1662352
Sulfate	98.6		0.594	5.00	1	05/02/2021 16:57	WG1662352

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000238	J	0.0000941	0.00100	1	04/30/2021 02:42	WG1661074
Toluene	0.000440	J	0.000278	0.00100	1	04/30/2021 02:42	WG1661074
Ethylbenzene	0.000192	J	0.000137	0.00100	1	04/30/2021 02:42	WG1661074
Xylenes, Total	0.000657	J	0.000174	0.00300	1	04/30/2021 02:42	WG1661074
Naphthalene	U		0.00100	0.00500	1	04/30/2021 02:42	WG1661074
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/30/2021 02:42	WG1661074
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/30/2021 02:42	WG1661074
(S) Toluene-d8	102			80.0-120		04/30/2021 02:42	WG1661074
(S) 4-Bromofluorobenzene	107			77.0-126		04/30/2021 02:42	WG1661074
(S) 1,2-Dichloroethane-d4	108			70.0-130		04/30/2021 02:42	WG1661074

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3649869-1 04/30/21 17:35

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1344061-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1344061-13 04/30/21 17:35 • (DUP) R3649869-3 04/30/21 17:35

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	665	667	1	0.201		5

L1344061-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1344061-15 04/30/21 17:35 • (DUP) R3649869-4 04/30/21 17:35

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	616	663	1	7.30	<u>J3</u>	5

Laboratory Control Sample (LCS)

(LCS) R3649869-2 04/30/21 17:35

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8380	95.2	77.4-123	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3649471-1 05/02/21 15:35

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1346124-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1346124-01 05/02/21 17:43 • (DUP) R3649471-3 05/02/21 17:54

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	9.58	9.56	1	0.189		15
Sulfate	46.9	46.9	1	0.116		15

L1343123-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1343123-10 05/02/21 21:32 • (DUP) R3649471-6 05/02/21 21:44

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	20.8	20.8	1	0.0173		15
Sulfate	36.1	36.1	1	0.0196		15

Laboratory Control Sample (LCS)

(LCS) R3649471-2 05/02/21 15:47

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	39.7	99.3	80.0-120	
Sulfate	40.0	40.5	101	80.0-120	

L1346124-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346124-01 05/02/21 17:43 • (MS) R3649471-4 05/02/21 18:40 • (MSD) R3649471-5 05/02/21 18:52

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	50.0	9.58	61.1	61.1	103	103	1	80.0-120			0.00131	15
Sulfate	50.0	46.9	96.3	96.3	98.7	98.8	1	80.0-120			0.0569	15



L1343123-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1343123-11 05/02/21 21:55 • (MS) R3649471-7 05/02/21 22:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Chloride	50.0	U	52.6	105	1	80.0-120	
Sulfate	50.0	U	52.9	106	1	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3648555-3 04/29/21 19:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	102			80.0-120
(S) 4-Bromofluorobenzene	106			77.0-126
(S) 1,2-Dichloroethane-d4	108			70.0-130

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

(LCS) R3648555-1 04/29/21 18:23 • (LCSD) R3648555-2 04/29/21 18:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00508	0.00515	102	103	70.0-123			1.37	20
Ethylbenzene	0.00500	0.00472	0.00507	94.4	101	79.0-123			7.15	20
Naphthalene	0.00500	0.00478	0.00573	95.6	115	54.0-135			18.1	20
Toluene	0.00500	0.00422	0.00461	84.4	92.2	79.0-120			8.83	20
1,2,4-Trimethylbenzene	0.00500	0.00474	0.00528	94.8	106	76.0-121			10.8	20
1,3,5-Trimethylbenzene	0.00500	0.00467	0.00518	93.4	104	76.0-122			10.4	20
Xylenes, Total	0.0150	0.0148	0.0162	98.7	108	79.0-123			9.03	20
(S) Toluene-d8				100	104	80.0-120				
(S) 4-Bromofluorobenzene				108	105	77.0-126				
(S) 1,2-Dichloroethane-d4				108	107	70.0-130				

L1343997-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343997-01 04/29/21 23:59 • (MS) R3648555-4 04/30/21 04:03 • (MSD) R3648555-5 04/30/21 04:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.103	0.0981	0.103	0.000	0.000	1	17.0-158	V	E V	4.87	27
Ethylbenzene	0.00500	0.147	0.129	0.148	0.000	20.0	1	30.0-155	E V	E V	13.7	27
Naphthalene	0.00500	0.0319	0.0308	0.0391	0.000	144	1	12.0-156	V		23.7	35
Toluene	0.00500	0.148	0.142	0.146	0.000	0.000	1	26.0-154	E V	E V	2.78	28
1,2,4-Trimethylbenzene	0.00500	0.0485	0.0878	0.0497	786	24.0	1	26.0-154	V	J3 V	55.4	27
1,3,5-Trimethylbenzene	0.00500	0.0433	0.0396	0.0472	0.000	78.0	1	28.0-153	V		17.5	27
Xylenes, Total	0.0150	0.526	0.470	0.517	0.000	0.000	1	29.0-154	V	V	9.52	28

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1343997-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343997-01 04/29/21 23:59 • (MS) R3648555-4 04/30/21 04:03 • (MSD) R3648555-5 04/30/21 04:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) Toluene-d8					100	101		80.0-120				
(S) 4-Bromofluorobenzene					112	110		77.0-126				
(S) 1,2-Dichloroethane-d4					110	106		70.0-130				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

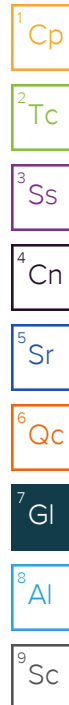
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



Condition	
NCF	OL

September 08, 2021

Caerus Oil and Gas

Sample Delivery Group: L1397300
Samples Received: 08/31/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Entire Report Reviewed By:



Chris Ward
Project Manager

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

Pace Analytical National

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

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

SAMPLE SUMMARY

20210826-J17E(MW-07) L1397300-01 GW

Collected by
K. Moreland

Collected date/time
08/26/21 12:08

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1733552	1	09/01/21 21:40	09/01/21 22:47	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733954	1	09/02/21 22:25	09/02/21 22:25	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733954	5	09/03/21 10:29	09/03/21 10:29	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1734861	1	09/04/21 14:13	09/04/21 14:13	JHH	Mt. Juliet, TN

20210826-J17E(MW-03) L1397300-02 GW

Collected by
K. Moreland

Collected date/time
08/26/21 13:30

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1733552	1	09/01/21 21:40	09/01/21 22:47	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733954	1	09/02/21 22:42	09/02/21 22:42	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733954	5	09/03/21 10:46	09/03/21 10:46	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1734861	1	09/04/21 14:33	09/04/21 14:33	JHH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

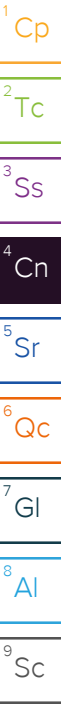
⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	843		13.3	1	09/01/2021 22:47	WG1733552

Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	8.94		0.379	1.00	1	09/02/2021 22:25	WG1733954
Sulfate	103		2.97	25.0	5	09/03/2021 10:29	WG1733954

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

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Benzene	0.000128	<u>J</u>	0.0000941	0.00100	1	09/04/2021 14:13	WG1734861
Toluene	0.000342	<u>J</u>	0.000278	0.00100	1	09/04/2021 14:13	WG1734861
Ethylbenzene	U		0.000137	0.00100	1	09/04/2021 14:13	WG1734861
Xylenes, Total	0.000446	<u>J</u>	0.000174	0.00300	1	09/04/2021 14:13	WG1734861
Naphthalene	U		0.00100	0.00500	1	09/04/2021 14:13	WG1734861
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/04/2021 14:13	WG1734861
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/04/2021 14:13	WG1734861
(S) Toluene-d8	103			80.0-120		09/04/2021 14:13	WG1734861
(S) 4-Bromofluorobenzene	90.3			77.0-126		09/04/2021 14:13	WG1734861
(S) 1,2-Dichloroethane-d4	97.0			70.0-130		09/04/2021 14:13	WG1734861

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	829		13.3	1	09/01/2021 22:47	WG1733552

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	9.46		0.379	1.00	1	09/02/2021 22:42	WG1733954
Sulfate	101		2.97	25.0	5	09/03/2021 10:46	WG1733954

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000236	J	0.0000941	0.00100	1	09/04/2021 14:33	WG1734861
Toluene	0.00124		0.000278	0.00100	1	09/04/2021 14:33	WG1734861
Ethylbenzene	0.000406	J	0.000137	0.00100	1	09/04/2021 14:33	WG1734861
Xylenes, Total	0.00151	J	0.000174	0.00300	1	09/04/2021 14:33	WG1734861
Naphthalene	U		0.00100	0.00500	1	09/04/2021 14:33	WG1734861
1,2,4-Trimethylbenzene	0.000495	J	0.000322	0.00100	1	09/04/2021 14:33	WG1734861
1,3,5-Trimethylbenzene	0.000139	J	0.000104	0.00100	1	09/04/2021 14:33	WG1734861
(S) Toluene-d8	101			80.0-120		09/04/2021 14:33	WG1734861
(S) 4-Bromofluorobenzene	93.2			77.0-126		09/04/2021 14:33	WG1734861
(S) 1,2-Dichloroethane-d4	95.6			70.0-130		09/04/2021 14:33	WG1734861

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3700215-1 09/01/21 22:47

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1395737-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395737-01 09/01/21 22:47 • (DUP) R3700215-3 09/01/21 22:47

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	876	880	1	0.456		5

L1396955-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396955-01 09/01/21 22:47 • (DUP) R3700215-4 09/01/21 22:47

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	588	594	1	1.02		5

Laboratory Control Sample (LCS)

(LCS) R3700215-2 09/01/21 22:47

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8490	96.5	77.4-123	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700059-1 09/02/21 12:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1397279-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1397279-09 09/02/21 21:20 • (DUP) R3700059-6 09/02/21 21:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	0.389	0.421	1	7.88	⌵	15
Sulfate	U	U	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3700059-2 09/02/21 13:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.9	99.8	80.0-120	
Sulfate	40.0	40.2	100	80.0-120	

L1397279-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1397279-09 09/02/21 21:20 • (MS) R3700059-7 09/02/21 21:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	0.389	51.9	103	1	80.0-120	
Sulfate	50.0	U	50.9	102	1	80.0-120	



Method Blank (MB)

(MB) R3700806-3 09/04/21 08:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	99.9			80.0-120
(S) 4-Bromofluorobenzene	92.6			77.0-126
(S) 1,2-Dichloroethane-d4	97.9			70.0-130

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

(LCS) R3700806-1 09/04/21 07:23 • (LCSD) R3700806-2 09/04/21 07:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00499	0.00523	99.8	105	70.0-123			4.70	20
Ethylbenzene	0.00500	0.00492	0.00530	98.4	106	79.0-123			7.44	20
Naphthalene	0.00500	0.00405	0.00459	81.0	91.8	54.0-135			12.5	20
Toluene	0.00500	0.00495	0.00534	99.0	107	79.0-120			7.58	20
1,2,4-Trimethylbenzene	0.00500	0.00461	0.00523	92.2	105	76.0-121			12.6	20
1,3,5-Trimethylbenzene	0.00500	0.00492	0.00570	98.4	114	76.0-122			14.7	20
Xylenes, Total	0.0150	0.0145	0.0151	96.7	101	79.0-123			4.05	20
(S) Toluene-d8				98.3	97.8	80.0-120				
(S) 4-Bromofluorobenzene				92.6	92.3	77.0-126				
(S) 1,2-Dichloroethane-d4				98.1	100	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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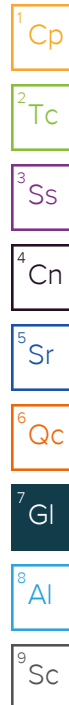
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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.
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Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

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



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



[illegible]

Caerus Oil and Gas

Sample Delivery Group: L1397298
Samples Received: 08/31/2021
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

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



Pace Analytical National

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

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Gravimetric Analysis by Method 2540 C-2011	6	⁵ Sr
Wet Chemistry by Method 9056A	7	
Volatile Organic Compounds (GC/MS) by Method 8260B	8	⁶ Qc
Gl: Glossary of Terms	9	⁷ Gl
Al: Accreditations & Locations	10	⁸ Al
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SAMPLE SUMMARY

20210827-J17E(MW05) L1397298-01 GW

Collected by
Parker Coit

Collected date/time
08/27/21 15:10

Received date/time
08/31/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1733552	1	09/01/21 21:40	09/01/21 22:47	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733954	1	09/02/21 22:09	09/02/21 22:09	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733954	5	09/03/21 10:13	09/03/21 10:13	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1734988	1	09/04/21 11:17	09/04/21 11:17	ADM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	885		13.3	1	09/01/2021 22:47	WG1733552

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	10.3		0.379	1.00	1	09/02/2021 22:09	WG1733954
Sulfate	101		2.97	25.0	5	09/03/2021 10:13	WG1733954

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	U		0.0000941	0.00100	1	09/04/2021 11:17	WG1734988
Toluene	U		0.000278	0.00100	1	09/04/2021 11:17	WG1734988
Ethylbenzene	U		0.000137	0.00100	1	09/04/2021 11:17	WG1734988
Xylenes, Total	U		0.000174	0.00300	1	09/04/2021 11:17	WG1734988
Naphthalene	U		0.00100	0.00500	1	09/04/2021 11:17	WG1734988
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/04/2021 11:17	WG1734988
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/04/2021 11:17	WG1734988
(S) Toluene-d8	96.3			80.0-120		09/04/2021 11:17	WG1734988
(S) 4-Bromofluorobenzene	89.8			77.0-126		09/04/2021 11:17	WG1734988
(S) 1,2-Dichloroethane-d4	103			70.0-130		09/04/2021 11:17	WG1734988

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Method Blank (MB)

(MB) R3700215-1 09/01/21 22:47

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1395737-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395737-01 09/01/21 22:47 • (DUP) R3700215-3 09/01/21 22:47

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	876	880	1	0.456		5

L1396955-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396955-01 09/01/21 22:47 • (DUP) R3700215-4 09/01/21 22:47

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	588	594	1	1.02		5

Laboratory Control Sample (LCS)

(LCS) R3700215-2 09/01/21 22:47

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8490	96.5	77.4-123	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700059-1 09/02/21 12:56

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1397279-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1397279-09 09/02/21 21:20 • (DUP) R3700059-6 09/02/21 21:36

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	0.389	0.421	1	7.88	⌵	15
Sulfate	U	U	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3700059-2 09/02/21 13:12

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	39.9	99.8	80.0-120	
Sulfate	40.0	40.2	100	80.0-120	

L1397279-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1397279-09 09/02/21 21:20 • (MS) R3700059-7 09/02/21 21:53

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	50.0	0.389	51.9	103	1	80.0-120	
Sulfate	50.0	U	50.9	102	1	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3701540-4 09/04/21 07:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	100			80.0-120
(S) 4-Bromofluorobenzene	92.6			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

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

(LCS) R3701540-1 09/04/21 05:27 • (LCSD) R3701540-2 09/04/21 05:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00521	0.00527	104	105	70.0-123			1.15	20
Ethylbenzene	0.00500	0.00454	0.00501	90.8	100	79.0-123			9.84	20
Naphthalene	0.00500	0.00387	0.00398	77.4	79.6	54.0-135			2.80	20
Toluene	0.00500	0.00480	0.00491	96.0	98.2	79.0-120			2.27	20
1,2,4-Trimethylbenzene	0.00500	0.00478	0.00508	95.6	102	76.0-121			6.09	20
1,3,5-Trimethylbenzene	0.00500	0.00469	0.00476	93.8	95.2	76.0-122			1.48	20
Xylenes, Total	0.0150	0.0140	0.0145	93.3	96.7	79.0-123			3.51	20
(S) Toluene-d8				99.8	98.6	80.0-120				
(S) 4-Bromofluorobenzene				95.7	96.9	77.0-126				
(S) 1,2-Dichloroethane-d4				102	112	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

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9Sc

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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.
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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

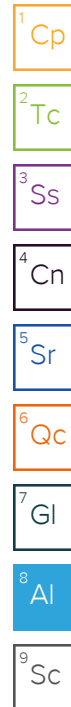
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



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

Depth	Date	Time
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No. of Cntrs	Country	Year	Value
1	Australia	1980	100
2	Brazil	1980	100
3	Canada	1980	100
4	France	1980	100
5	Germany	1980	100
6	Italy	1980	100
7	Japan	1980	100
8	Netherlands	1980	100
9	Sweden	1980	100
10	Switzerland	1980	100
11	United Kingdom	1980	100
12	USA	1980	100
13	Belgium	1980	100
14	Denmark	1980	100
15	Greece	1980	100
16	Ireland	1980	100
17	Luxembourg	1980	100
18	Norway	1980	100
19	Portugal	1980	100
20	Spain	1980	100
21	Finland	1980	100
22	Poland	1980	100
23	Czech Republic	1980	100
24	Slovakia	1980	100
25	Hungary	1980	100
26	Romania	1980	100
27	Bulgaria	1980	100
28	Yugoslavia	1980	100
29	Croatia	1980	100
30	Slovenia	1980	100
31	Serbia	1980	100
32	Montenegro	1980	100
33	Bosnia and Herzegovina	1980	100
34	Herzegovina	1980	100
35	Federated States of Micronesia	1980	100
36	Marshall Islands	1980	100
37	Northern Mariana Islands	1980	100
38	Palau	1980	100
39	Samoa	1980	100
40	Tonga	1980	100
41	Tuvalu	1980	100
42	Vanuatu	1980	100
43	Wallis and Futuna	1980	100
44	French Polynesia	1980	100
45	New Caledonia	1980	100
46	Guadeloupe	1980	100
47	Martinique	1980	100
48	Reunion	1980	100
49	Mayotte	1980	100
50	Comoros	1980	100
51	Dominican Republic	1980	100
52	Haiti	1980	100
53	Jamaica	1980	100
54	Puerto Rico	1980	100
55	Venezuela	1980	100
56	Colombia	1980	100
57	Ecuador	1980	100
58	Peru	1980	100
59	Uruguay	1980	100
60	Paraguay	1980	100
61	Argentina	1980	100
62	Chile	1980	100
63	Bolivia	1980	100
64	Costa Rica	1980	100
65	El Salvador	1980	100
66	Honduras	1980	100
67	Nicaragua	1980	100
68	Panama	1980	100
69	Trinidad and Tobago	1980	100
70	Grenada	1980	100
71	St. Kitts and Nevis	1980	100
72	St. Lucia	1980	100
73	St. Vincent and the Grenadines	1980	100
74	Dominica	1980	100
75	Barbados	1980	100
76	Antigua and Barbuda	1980	100
77	Belize	1980	100
78	Guyana	1980	100
79	Suriname	1980	100
80	Aruba	1980	100
81	Curaçao	1980	100
82	Armenia	1980	100
83	Georgia	1980	100
84	Abkhaz Republic	1980	100
85	South Ossetia	1980	100
86	Ingushetia	1980	100
87	Dagestan	1980	100
88	Chechnya	1980	100
89	Kabard-Balkar Republic	1980	100
90	Tatarstan	1980	100
91	Bashkortostan	1980	100
92	Chuvash Republic	1980	100
93	Mordovia	1980	100
94	Orenburg Region	1980	100
95	Sverdlovsk Region	1980	100
96	Kurgan Region	1980	100
97	Khanty-Mansi Autonomous Okrug	1980	100
98	Nenets Autonomous Okrug	1980	100
99	Chukotka Autonomous Okrug	1980	100
100	Magadan Oblast	1980	100
101	Khanty-Mansi Autonomous Okrug	1980	100
102	Nenets Autonomous Okrug	1980	100
103	Chukotka Autonomous Okrug	1980	100
104	Magadan Oblast	1980	100
105	Khanty-Mansi Autonomous Okrug	1980	100
106	Nenets Autonomous Okrug	1980	100
107	Chukotka Autonomous Okrug	1980	100
108	Magadan Oblast	1980	100
109	Khanty-Mansi Autonomous Okrug	1980	100
110	Nenets		

[illegible]

Sample # (lab only)

七	
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naphthalene

Condition:
NCF / OK

Caerus Oil and Gas

Sample Delivery Group: L1398556
Samples Received: 09/02/2021
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

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



Pace Analytical National

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

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		⁹ Sc

SAMPLE SUMMARY

20210831-J17E (MW-06) L1398556-01 GW

Collected by
Dustin H.

Collected date/time
08/31/21 15:30

Received date/time
09/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1735417	1	09/05/21 18:58	09/05/21 18:58	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736051	5	09/07/21 19:08	09/07/21 19:08	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735690	1	09/06/21 15:40	09/06/21 15:40	JCP	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	833		13.3	1	09/06/2021 20:45	WG1735714

Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	11.3		0.379	1.00	1	09/05/2021 18:58	WG1735417
Sulfate	96.5		2.97	25.0	5	09/07/2021 19:08	WG1736051

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

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Benzene	U		0.0000941	0.00100	1	09/06/2021 15:40	WG1735690
Toluene	U		0.000278	0.00100	1	09/06/2021 15:40	WG1735690
Ethylbenzene	U		0.000137	0.00100	1	09/06/2021 15:40	WG1735690
Xylenes, Total	U		0.000174	0.00300	1	09/06/2021 15:40	WG1735690
Naphthalene	U		0.00100	0.00500	1	09/06/2021 15:40	WG1735690
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/06/2021 15:40	WG1735690
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/06/2021 15:40	WG1735690
(S) Toluene-d8	91.7			80.0-120		09/06/2021 15:40	WG1735690
(S) 4-Bromofluorobenzene	95.4			77.0-126		09/06/2021 15:40	WG1735690
(S) 1,2-Dichloroethane-d4	110			70.0-130		09/06/2021 15:40	WG1735690

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3701758-1 09/06/21 20:45

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1398556-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398556-01 09/06/21 20:45 • (DUP) R3701758-3 09/06/21 20:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	833	841	1	0.955		5

L1398905-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-07 09/06/21 20:45 • (DUP) R3701758-4 09/06/21 20:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1030	1040	1	0.970		5

Laboratory Control Sample (LCS)

(LCS) R3701758-2 09/06/21 20:45

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8450	96.0	77.4-123	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3700973-1 09/05/21 12:03

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00

L1395709-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395709-01 09/05/21 15:25 • (DUP) R3700973-3 09/05/21 15:41

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	60.8	60.4	1	0.762		15

L1398595-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1398595-05 09/05/21 19:47 • (DUP) R3700973-5 09/05/21 20:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	42.7	42.7	1	0.0382		15

Laboratory Control Sample (LCS)

(LCS) R3700973-2 09/05/21 12:20

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	40.0	100	80.0-120	

L1395709-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1395709-01 09/05/21 15:25 • (MS) R3700973-4 09/05/21 15:58

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	50.0	60.8	110	97.6	1	80.0-120	E

L1398595-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398595-05 09/05/21 19:47 • (MS) R3700973-6 09/05/21 20:20 • (MSD) R3700973-7 09/05/21 20:37

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	50.0	42.7	93.5	93.4	102	102	1	80.0-120			0.0581	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3701502-1 09/07/21 14:46

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfate	U		0.594	5.00

L1395958-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1395958-05 09/07/21 15:35 • (DUP) R3701502-3 09/07/21 15:52

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	168	164	5	2.73		15

L1399461-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1399461-03 09/07/21 23:47 • (DUP) R3701502-7 09/08/21 00:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	82.5	82.3	5	0.147		15

Laboratory Control Sample (LCS)

(LCS) R3701502-2 09/07/21 15:02

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Sulfate	40.0	40.5	101	80.0-120	

L1398737-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398737-03 09/07/21 19:25 • (MS) R3701502-4 09/07/21 19:41 • (MSD) R3701502-5 09/07/21 19:58

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Sulfate	50.0	12.7	63.5	64.7	102	104	1	80.0-120			1.80	15

L1397080-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1397080-04 09/07/21 22:25 • (MS) R3701502-6 09/07/21 22:42

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Sulfate	50.0	33.7	85.0	103	1	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3701885-2 09/06/21 11:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	0.00162	U	0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	91.4			80.0-120
(S) 4-Bromofluorobenzene	96.6			77.0-126
(S) 1,2-Dichloroethane-d4	113			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3701885-1 09/06/21 09:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00544	109	70.0-123	
Ethylbenzene	0.00500	0.00484	96.8	79.0-123	
Naphthalene	0.00500	0.00425	85.0	54.0-135	
Toluene	0.00500	0.00431	86.2	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00462	92.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00481	96.2	76.0-122	
Xylenes, Total	0.0150	0.0143	95.3	79.0-123	
(S) Toluene-d8			89.9	80.0-120	
(S) 4-Bromofluorobenzene			96.9	77.0-126	
(S) 1,2-Dichloroethane-d4			110	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

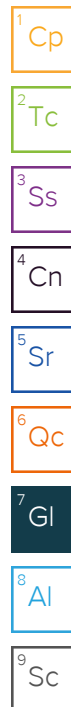
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

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.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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



September 16, 2021

Caerus Oil and Gas

Sample Delivery Group: L1400677
Samples Received: 09/09/2021
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
Project Manager

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

Pace Analytical National

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SAMPLE SUMMARY

20210907-J17E (MW04) L1400677-01 GW

Collected by
Parker Coit

Collected date/time
09/07/21 10:25

Received date/time
09/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1739279	1	09/13/21 11:30	09/13/21 12:14	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	1	09/13/21 01:03	09/13/21 01:03	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	5	09/13/21 04:50	09/13/21 04:50	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738734	1	09/12/21 01:42	09/12/21 01:42	DWR	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

20210907-J17E (MW10) L1400677-02 GW

Collected by
Parker Coit

Collected date/time
09/07/21 13:05

Received date/time
09/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1740052	1	09/14/21 17:37	09/14/21 19:37	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	1	09/13/21 01:16	09/13/21 01:16	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	5	09/13/21 05:03	09/13/21 05:03	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738734	1	09/12/21 02:03	09/12/21 02:03	DWR	Mt. Juliet, TN

⁵Sr

⁶Qc

⁷Gl

⁸Al

20210907-J17E (MW9) L1400677-03 GW

Collected by
Parker Coit

Collected date/time
09/07/21 14:23

Received date/time
09/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1739279	1	09/13/21 11:30	09/13/21 12:14	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	1	09/13/21 01:29	09/13/21 01:29	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	5	09/13/21 05:16	09/13/21 05:16	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738734	1	09/12/21 02:23	09/12/21 02:23	DWR	Mt. Juliet, TN

⁹Sc

20210907-J17E (MW8) L1400677-04 GW

Collected by
Parker Coit

Collected date/time
09/07/21 14:59

Received date/time
09/09/21 09:00

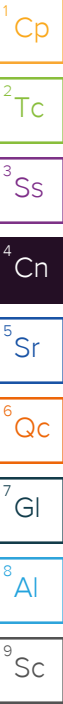
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1739279	1	09/13/21 11:30	09/13/21 12:14	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	1	09/13/21 01:43	09/13/21 01:43	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1739048	5	09/13/21 05:29	09/13/21 05:29	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738734	1	09/12/21 02:44	09/12/21 02:44	DWR	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	772		13.3	1	09/13/2021 12:14	WG1739279

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.5		0.379	1.00	1	09/13/2021 01:03	WG1739048
Sulfate	98.9		2.97	25.0	5	09/13/2021 04:50	WG1739048

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	09/12/2021 01:42	WG1738734
Toluene	U		0.000278	0.00100	1	09/12/2021 01:42	WG1738734
Ethylbenzene	U		0.000137	0.00100	1	09/12/2021 01:42	WG1738734
Xylenes, Total	0.000188	J	0.000174	0.00300	1	09/12/2021 01:42	WG1738734
Naphthalene	U		0.00100	0.00500	1	09/12/2021 01:42	WG1738734
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/12/2021 01:42	WG1738734
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/12/2021 01:42	WG1738734
(S) Toluene-d8	94.6			80.0-120		09/12/2021 01:42	WG1738734
(S) 4-Bromofluorobenzene	94.8			77.0-126		09/12/2021 01:42	WG1738734
(S) 1,2-Dichloroethane-d4	115			70.0-130		09/12/2021 01:42	WG1738734

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	819		13.3	1	09/14/2021 19:37	WG1740052

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.0		0.379	1.00	1	09/13/2021 01:16	WG1739048
Sulfate	100		2.97	25.0	5	09/13/2021 05:03	WG1739048

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	09/12/2021 02:03	WG1738734
Toluene	U		0.000278	0.00100	1	09/12/2021 02:03	WG1738734
Ethylbenzene	U		0.000137	0.00100	1	09/12/2021 02:03	WG1738734
Xylenes, Total	0.000236	J	0.000174	0.00300	1	09/12/2021 02:03	WG1738734
Naphthalene	U		0.00100	0.00500	1	09/12/2021 02:03	WG1738734
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/12/2021 02:03	WG1738734
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/12/2021 02:03	WG1738734
(S) Toluene-d8	96.8			80.0-120		09/12/2021 02:03	WG1738734
(S) 4-Bromofluorobenzene	95.4			77.0-126		09/12/2021 02:03	WG1738734
(S) 1,2-Dichloroethane-d4	115			70.0-130		09/12/2021 02:03	WG1738734

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	797		13.3	1	09/13/2021 12:14	WG1739279

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	11.5		0.379	1.00	1	09/13/2021 01:29	WG1739048
Sulfate	102		2.97	25.0	5	09/13/2021 05:16	WG1739048

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000196	J	0.0000941	0.00100	1	09/12/2021 02:23	WG1738734
Toluene	0.000374	J	0.000278	0.00100	1	09/12/2021 02:23	WG1738734
Ethylbenzene	U		0.000137	0.00100	1	09/12/2021 02:23	WG1738734
Xylenes, Total	0.000622	J	0.000174	0.00300	1	09/12/2021 02:23	WG1738734
Naphthalene	U		0.00100	0.00500	1	09/12/2021 02:23	WG1738734
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/12/2021 02:23	WG1738734
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/12/2021 02:23	WG1738734
(S) Toluene-d8	95.1			80.0-120		09/12/2021 02:23	WG1738734
(S) 4-Bromofluorobenzene	91.6			77.0-126		09/12/2021 02:23	WG1738734
(S) 1,2-Dichloroethane-d4	114			70.0-130		09/12/2021 02:23	WG1738734

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	803		13.3	1	09/13/2021 12:14	WG1739279

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.3		0.379	1.00	1	09/13/2021 01:43	WG1739048
Sulfate	100		2.97	25.0	5	09/13/2021 05:29	WG1739048

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	09/12/2021 02:44	WG1738734
Toluene	U		0.000278	0.00100	1	09/12/2021 02:44	WG1738734
Ethylbenzene	U		0.000137	0.00100	1	09/12/2021 02:44	WG1738734
Xylenes, Total	U		0.000174	0.00300	1	09/12/2021 02:44	WG1738734
Naphthalene	U		0.00100	0.00500	1	09/12/2021 02:44	WG1738734
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	09/12/2021 02:44	WG1738734
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	09/12/2021 02:44	WG1738734
(S) Toluene-d8	95.1			80.0-120		09/12/2021 02:44	WG1738734
(S) 4-Bromofluorobenzene	93.2			77.0-126		09/12/2021 02:44	WG1738734
(S) 1,2-Dichloroethane-d4	111			70.0-130		09/12/2021 02:44	WG1738734

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3704561-1 09/13/21 12:14

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1400096-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1400096-02 09/13/21 12:14 • (DUP) R3704561-3 09/13/21 12:14

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	633	639	1	0.840		5

L1400096-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1400096-03 09/13/21 12:14 • (DUP) R3704561-4 09/13/21 12:14

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	607	665	1	9.22	<u>J3</u>	5

Laboratory Control Sample (LCS)

(LCS) R3704561-2 09/13/21 12:14

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8060	91.6	77.4-123	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3705209-1 09/14/21 19:37

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3705209-3 09/14/21 19:37

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1570	1570	1	0.319		5

L1402244-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1402244-02 09/14/21 19:37 • (DUP) R3705209-4 09/14/21 19:37

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	962	968	1	0.622		5

Laboratory Control Sample (LCS)

(LCS) R3705209-2 09/14/21 19:37

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8470	96.3	77.4-123	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703984-1 09/12/21 19:40

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1400566-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400566-01 09/12/21 23:04 • (DUP) R3703984-3 09/12/21 23:17

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	70.4	72.7	1	3.16		15
Sulfate	U	U	1	0.000		15

L1400682-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400682-01 09/13/21 01:56 • (DUP) R3703984-6 09/13/21 02:36

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	34.2	34.2	1	0.0357		15
Sulfate	88.5	88.6	1	0.115		15

Laboratory Control Sample (LCS)

(LCS) R3703984-2 09/12/21 19:53

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	40.9	102	80.0-120	
Sulfate	40.0	40.9	102	80.0-120	

L1400566-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400566-02 09/12/21 23:57 • (MS) R3703984-4 09/13/21 00:10 • (MSD) R3703984-5 09/13/21 00:23

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	50.0	86.1	138	139	104	105	1	80.0-120	E	E	0.634	15
Sulfate	50.0	U	52.4	53.5	105	107	1	80.0-120			1.98	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1400682-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400682-01 09/13/21 01:56 • (MS) R3703984-7 09/13/21 02:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	34.2	84.3	100	1	80.0-120	
Sulfate	50.0	88.5	136	94.9	1	80.0-120	E

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3704097-3 09/11/21 20:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	97.2			80.0-120
(S) 4-Bromofluorobenzene	93.4			77.0-126
(S) 1,2-Dichloroethane-d4	112			70.0-130

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

(LCS) R3704097-1 09/11/21 19:29 • (LCSD) R3704097-2 09/11/21 19:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00512	0.00531	102	106	70.0-123			3.64	20
Ethylbenzene	0.00500	0.00502	0.00550	100	110	79.0-123			9.13	20
Naphthalene	0.00500	0.00391	0.00353	78.2	70.6	54.0-135			10.2	20
Toluene	0.00500	0.00450	0.00502	90.0	100	79.0-120			10.9	20
1,2,4-Trimethylbenzene	0.00500	0.00528	0.00499	106	99.8	76.0-121			5.65	20
1,3,5-Trimethylbenzene	0.00500	0.00557	0.00553	111	111	76.0-122			0.721	20
Xylenes, Total	0.0150	0.0144	0.0154	96.0	103	79.0-123			6.71	20
(S) Toluene-d8				92.5	99.2	80.0-120				
(S) 4-Bromofluorobenzene				93.0	93.1	77.0-126				
(S) 1,2-Dichloroethane-d4				113	111	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

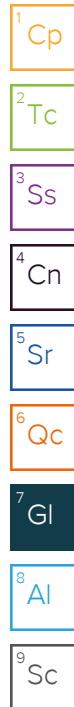
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

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



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



Condition:
NCF / OK

October 20, 2021

Caerus Oil and Gas

Sample Delivery Group: L1414278
Samples Received: 10/06/2021
Project Number: J17E
Description: J17E Dumpline Release
Site: J17E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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

Pace Analytical National

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

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20211004-J17E(MW01) L1414278-01 GW

				Collected by DH	Collected date/time 10/04/21 13:40	Received date/time 10/06/21 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 17:37	10/12/21 17:37	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 06:26	10/13/21 06:26	JCP	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20211004-J17E(MW02) L1414278-02 GW

				Collected by DH	Collected date/time 10/04/21 14:10	Received date/time 10/06/21 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	1	10/12/21 18:09	10/12/21 18:09	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 18:59	10/12/21 18:59	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 06:47	10/13/21 06:47	JCP	Mt. Juliet, TN

20211004-J17E(MW04) L1414278-03 GW

				Collected by DH	Collected date/time 10/04/21 14:30	Received date/time 10/06/21 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 19:15	10/12/21 19:15	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 07:08	10/13/21 07:08	JCP	Mt. Juliet, TN

20211004-J17E(MW03) L1414278-04 GW

				Collected by DH	Collected date/time 10/04/21 14:20	Received date/time 10/06/21 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	1	10/12/21 19:31	10/12/21 19:31	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 20:21	10/12/21 20:21	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 07:29	10/13/21 07:29	JCP	Mt. Juliet, TN

20211004-J17E(MW05) L1414278-05 GW

				Collected by DH	Collected date/time 10/04/21 14:50	Received date/time 10/06/21 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	1	10/12/21 20:37	10/12/21 20:37	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 20:53	10/12/21 20:53	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 07:50	10/13/21 07:50	JCP	Mt. Juliet, TN

20211004-J17E(MW06) L1414278-06 GW

				Collected by DH	Collected date/time 10/04/21 13:50	Received date/time 10/06/21 09:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	1	10/12/21 21:10	10/12/21 21:10	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 21:26	10/12/21 21:26	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 08:10	10/13/21 08:10	JCP	Mt. Juliet, TN

SAMPLE SUMMARY

20211004-J17E(MW07) L1414278-07 GW

Collected by
DH

Collected date/time
10/04/21 14:00

Received date/time
10/06/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 22:06	10/12/21 22:06	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 08:31	10/13/21 08:31	JCP	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

20211004-J17E(MW08) L1414278-08 GW

Collected by
DH

Collected date/time
10/04/21 15:20

Received date/time
10/06/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 22:22	10/12/21 22:22	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 08:52	10/13/21 08:52	JCP	Mt. Juliet, TN

20211004-J17E(MW09) L1414278-09 GW

Collected by
DH

Collected date/time
10/04/21 15:00

Received date/time
10/06/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 22:39	10/12/21 22:39	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 09:12	10/13/21 09:12	JCP	Mt. Juliet, TN

20211004-J17E(MW10) L1414278-10 GW

Collected by
DH

Collected date/time
10/04/21 14:40

Received date/time
10/06/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753463	1	10/07/21 18:10	10/07/21 19:06	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/12/21 22:55	10/12/21 22:55	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1757397	1	10/14/21 23:39	10/14/21 23:39	JCP	Mt. Juliet, TN

20211004-J17E(SB02TB) L1414278-11 GW

Collected by
DH

Collected date/time
10/04/21 15:10

Received date/time
10/06/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1753499	1	10/07/21 21:32	10/07/21 22:49	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	1	10/12/21 23:12	10/12/21 23:12	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1755524	5	10/13/21 00:18	10/13/21 00:18	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1755669	1	10/13/21 03:41	10/13/21 03:41	JCP	Mt. Juliet, TN

CASE NARRATIVE

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

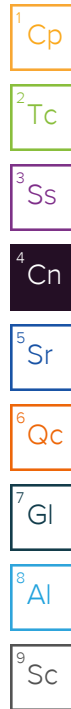


Chris Ward
Project Manager

Sample Delivery Group (SDG) Narrative

pH outside of method requirement.

Lab Sample ID	Project Sample ID	Method
L1414278-01	20211004-J17E(MW01)	8260B
L1414278-02	20211004-J17E(MW02)	8260B
L1414278-05	20211004-J17E(MW05)	8260B
L1414278-07	20211004-J17E(MW07)	8260B
L1414278-09	20211004-J17E(MW09)	8260B
L1414278-10	20211004-J17E(MW10)	8260B
L1414278-11	20211004-J17E(SB02TB)	8260B



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	834		20.0	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	44.5		1.90	5.00	5	10/12/2021 17:37	WG1755524
Sulfate	117		2.97	25.0	5	10/12/2021 17:37	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000147	B J	0.0000941	0.00100	1	10/13/2021 06:26	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 06:26	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 06:26	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 06:26	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 06:26	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 06:26	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 06:26	WG1755669
(S) Toluene-d8	99.8			80.0-120		10/13/2021 06:26	WG1755669
(S) 4-Bromofluorobenzene	91.8			77.0-126		10/13/2021 06:26	WG1755669
(S) 1,2-Dichloroethane-d4	109			70.0-130		10/13/2021 06:26	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	833		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.73		0.379	1.00	1	10/12/2021 18:09	WG1755524
Sulfate	98.3		2.97	25.0	5	10/12/2021 18:59	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000101	B J	0.0000941	0.00100	1	10/13/2021 06:47	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 06:47	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 06:47	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 06:47	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 06:47	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 06:47	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 06:47	WG1755669
(S) Toluene-d8	95.9			80.0-120		10/13/2021 06:47	WG1755669
(S) 4-Bromofluorobenzene	97.3			77.0-126		10/13/2021 06:47	WG1755669
(S) 1,2-Dichloroethane-d4	112			70.0-130		10/13/2021 06:47	WG1755669

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	827		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	10.2		1.90	5.00	5	10/12/2021 19:15	WG1755524
Sulfate	96.7		2.97	25.0	5	10/12/2021 19:15	WG1755524

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

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Benzene	U		0.0000941	0.00100	1	10/13/2021 07:08	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 07:08	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 07:08	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 07:08	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 07:08	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 07:08	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 07:08	WG1755669
(S) Toluene-d8	101			80.0-120		10/13/2021 07:08	WG1755669
(S) 4-Bromofluorobenzene	92.7			77.0-126		10/13/2021 07:08	WG1755669
(S) 1,2-Dichloroethane-d4	111			70.0-130		10/13/2021 07:08	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	797		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	7.96		0.379	1.00	1	10/12/2021 19:31	WG1755524
Sulfate	97.8		2.97	25.0	5	10/12/2021 20:21	WG1755524

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

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Benzene	U		0.0000941	0.00100	1	10/13/2021 07:29	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 07:29	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 07:29	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 07:29	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 07:29	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 07:29	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 07:29	WG1755669
(S) Toluene-d8	96.1			80.0-120		10/13/2021 07:29	WG1755669
(S) 4-Bromofluorobenzene	92.4			77.0-126		10/13/2021 07:29	WG1755669
(S) 1,2-Dichloroethane-d4	109			70.0-130		10/13/2021 07:29	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	829		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.1		0.379	1.00	1	10/12/2021 20:37	WG1755524
Sulfate	95.3		2.97	25.0	5	10/12/2021 20:53	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.0000984	B J	0.0000941	0.00100	1	10/13/2021 07:50	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 07:50	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 07:50	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 07:50	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 07:50	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 07:50	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 07:50	WG1755669
(S) Toluene-d8	97.2			80.0-120		10/13/2021 07:50	WG1755669
(S) 4-Bromofluorobenzene	90.8			77.0-126		10/13/2021 07:50	WG1755669
(S) 1,2-Dichloroethane-d4	107			70.0-130		10/13/2021 07:50	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	777		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.4		0.379	1.00	1	10/12/2021 21:10	WG1755524
Sulfate	98.1		2.97	25.0	5	10/12/2021 21:26	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000104	B J	0.0000941	0.00100	1	10/13/2021 08:10	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 08:10	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 08:10	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 08:10	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 08:10	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 08:10	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 08:10	WG1755669
(S) Toluene-d8	97.0			80.0-120		10/13/2021 08:10	WG1755669
(S) 4-Bromofluorobenzene	88.1			77.0-126		10/13/2021 08:10	WG1755669
(S) 1,2-Dichloroethane-d4	112			70.0-130		10/13/2021 08:10	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	516		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	8.97		1.90	5.00	5	10/12/2021 22:06	WG1755524
Sulfate	97.8		2.97	25.0	5	10/12/2021 22:06	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000161	B J	0.0000941	0.00100	1	10/13/2021 08:31	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 08:31	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 08:31	WG1755669
Xylenes, Total	0.000232	J	0.000174	0.00300	1	10/13/2021 08:31	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 08:31	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 08:31	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 08:31	WG1755669
(S) Toluene-d8	103			80.0-120		10/13/2021 08:31	WG1755669
(S) 4-Bromofluorobenzene	94.4			77.0-126		10/13/2021 08:31	WG1755669
(S) 1,2-Dichloroethane-d4	111			70.0-130		10/13/2021 08:31	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1230		20.0	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.7		1.90	5.00	5	10/12/2021 22:22	WG1755524
Sulfate	95.3		2.97	25.0	5	10/12/2021 22:22	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000134	B J	0.0000941	0.00100	1	10/13/2021 08:52	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 08:52	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 08:52	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 08:52	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 08:52	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 08:52	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 08:52	WG1755669
(S) Toluene-d8	105			80.0-120		10/13/2021 08:52	WG1755669
(S) 4-Bromofluorobenzene	94.4			77.0-126		10/13/2021 08:52	WG1755669
(S) 1,2-Dichloroethane-d4	106			70.0-130		10/13/2021 08:52	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	800		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	11.8		1.90	5.00	5	10/12/2021 22:39	WG1755524
Sulfate	99.8		2.97	25.0	5	10/12/2021 22:39	WG1755524

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000111	B J	0.0000941	0.00100	1	10/13/2021 09:12	WG1755669
Toluene	U		0.000278	0.00100	1	10/13/2021 09:12	WG1755669
Ethylbenzene	U		0.000137	0.00100	1	10/13/2021 09:12	WG1755669
Xylenes, Total	U		0.000174	0.00300	1	10/13/2021 09:12	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 09:12	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 09:12	WG1755669
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/13/2021 09:12	WG1755669
(S) Toluene-d8	102			80.0-120		10/13/2021 09:12	WG1755669
(S) 4-Bromofluorobenzene	92.4			77.0-126		10/13/2021 09:12	WG1755669
(S) 1,2-Dichloroethane-d4	108			70.0-130		10/13/2021 09:12	WG1755669

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	824		13.3	1	10/07/2021 19:06	WG1753463

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	9.79		1.90	5.00	5	10/12/2021 22:55	WG1755524
Sulfate	99.1		2.97	25.0	5	10/12/2021 22:55	WG1755524

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	U		0.0000941	0.00100	1	10/14/2021 23:39	WG1757397
Toluene	U		0.000278	0.00100	1	10/14/2021 23:39	WG1757397
Ethylbenzene	U		0.000137	0.00100	1	10/14/2021 23:39	WG1757397
Xylenes, Total	U		0.000174	0.00300	1	10/14/2021 23:39	WG1757397
Naphthalene	U		0.00100	0.00500	1	10/14/2021 23:39	WG1757397
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/14/2021 23:39	WG1757397
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/14/2021 23:39	WG1757397
(S) Toluene-d8	111			80.0-120		10/14/2021 23:39	WG1757397
(S) 4-Bromofluorobenzene	102			77.0-126		10/14/2021 23:39	WG1757397
(S) 1,2-Dichloroethane-d4	104			70.0-130		10/14/2021 23:39	WG1757397

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	869		13.3	1	10/07/2021 22:49	WG1753499

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	9.18		0.379	1.00	1	10/12/2021 23:12	WG1755524
Sulfate	96.7		2.97	25.0	5	10/13/2021 00:18	WG1755524

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.186		0.0000941	0.00100	1	10/13/2021 03:41	WG1755669
Toluene	0.0944		0.000278	0.00100	1	10/13/2021 03:41	WG1755669
Ethylbenzene	0.00118		0.000137	0.00100	1	10/13/2021 03:41	WG1755669
Xylenes, Total	0.0144		0.000174	0.00300	1	10/13/2021 03:41	WG1755669
Naphthalene	U		0.00100	0.00500	1	10/13/2021 03:41	WG1755669
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/13/2021 03:41	WG1755669
1,3,5-Trimethylbenzene	0.000291	J	0.000104	0.00100	1	10/13/2021 03:41	WG1755669
(S) Toluene-d8	99.7			80.0-120		10/13/2021 03:41	WG1755669
(S) 4-Bromofluorobenzene	93.2			77.0-126		10/13/2021 03:41	WG1755669
(S) 1,2-Dichloroethane-d4	108			70.0-130		10/13/2021 03:41	WG1755669

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3714931-1 10/07/21 19:06

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1414278-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1414278-02 10/07/21 19:06 • (DUP) R3714931-3 10/07/21 19:06

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	833	829	1	0.481		5

L1414278-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1414278-03 10/07/21 19:06 • (DUP) R3714931-4 10/07/21 19:06

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	827	844	1	2.07		5

Laboratory Control Sample (LCS)

(LCS) R3714931-2 10/07/21 19:06

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8420	95.7	77.4-123	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3714922-1 10/07/21 22:49

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1413080-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1413080-01 10/07/21 22:49 • (DUP) R3714922-3 10/07/21 22:49

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	908	903	1	0.589		5

L1414278-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1414278-11 10/07/21 22:49 • (DUP) R3714922-4 10/07/21 22:49

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	869	849	1	2.33		5

Laboratory Control Sample (LCS)

(LCS) R3714922-2 10/07/21 22:49

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8760	99.5	77.4-123	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3716252-1 10/12/21 11:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1414278-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1414278-01 10/12/21 17:37 • (DUP) R3716252-3 10/12/21 17:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	44.5	44.2	5	0.535		15
Sulfate	117	116	5	0.493		15

L1414316-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1414316-08 10/13/21 03:36 • (DUP) R3716252-7 10/13/21 03:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	43.4	43.3	1	0.201		15
Sulfate	69.9	70.0	1	0.183		15

Laboratory Control Sample (LCS)

(LCS) R3716252-2 10/12/21 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.5	98.8	80.0-120	
Sulfate	40.0	39.5	98.8	80.0-120	

L1414278-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1414278-02 10/12/21 18:09 • (MS) R3716252-4 10/12/21 18:26 • (MSD) R3716252-5 10/12/21 18:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	6.73	57.0	57.9	101	102	1	80.0-120			1.52	15
Sulfate	50.0	106	153	154	95.5	97.0	1	80.0-120	E	E	0.506	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1414278-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1414278-11 10/12/21 23:12 • (MS) R3716252-6 10/13/21 00:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Chloride	50.0	9.18	60.8	103	1	80.0-120	
Sulfate	50.0	103	152	97.6	1	80.0-120	E

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3716529-2 10/12/21 23:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	0.000132	U	0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	98.4			80.0-120
(S) 4-Bromofluorobenzene	91.4			77.0-126
(S) 1,2-Dichloroethane-d4	124			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3716529-1 10/12/21 22:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00483	96.6	70.0-123	
Ethylbenzene	0.00500	0.00481	96.2	79.0-123	
Naphthalene	0.00500	0.00444	88.8	54.0-135	
Toluene	0.00500	0.00434	86.8	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00428	85.6	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00442	88.4	76.0-122	
Xylenes, Total	0.0150	0.0138	92.0	79.0-123	
(S) Toluene-d8			93.7	80.0-120	
(S) 4-Bromofluorobenzene			93.6	77.0-126	
(S) 1,2-Dichloroethane-d4			125	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3717560-2 10/14/21 21:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	111			80.0-120
(S) 4-Bromofluorobenzene	102			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3717560-1 10/14/21 21:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00515	103	70.0-123	
Ethylbenzene	0.00500	0.00497	99.4	79.0-123	
Naphthalene	0.00500	0.00582	116	54.0-135	
Toluene	0.00500	0.00506	101	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00488	97.6	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00486	97.2	76.0-122	
Xylenes, Total	0.0150	0.0154	103	79.0-123	
(S) Toluene-d8			107	80.0-120	
(S) 4-Bromofluorobenzene			101	77.0-126	
(S) 1,2-Dichloroethane-d4			103	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

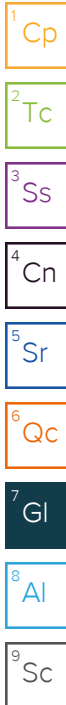
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


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

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

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

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



Caerus Oil & Gas LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606				Billing Information:				Analysis / Container / Preservative										Chain of Custody Page <u>1</u> of <u>2</u>			
				Same as above														 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859			
Report to: bmiddleton@caerusoilandgas.com				Email To: bmiddleton@caerusoilandgas.com																	
Project Description: 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):		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #																	
Immediately <input checked="" type="checkbox"/> Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>				Date Results Needed Standard TAT																	
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH - GRO,DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	fluorene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene	BTEX, naphthalene, 1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Chloride, Sulfate, TDS				
20211004-J17E (MW01)	Grab	GW	NA	10/4/21	1340	5									+	+	+	-01			
20211004-J17E (MW02)						1410	1											-02			
20211004-J17E (MW04)						1430												-03			
20211004-J17E (MW03)						1420												-04			
20211004-J17E (MW05)						1450												-05			
20211004-J17E (MW06)						1350												-06			
20211004-J17E (MW07)						1400												-07			
20211004-J17E (MW08)						1520												-08			
20211004-J17E (MW09)						1500												-09			
20211004-J17E (MW10)						1440									+	+	+	-10			
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other _____				Remarks: Analyze under Protection of Groundwater Soil Screening Level Concentrations pH _____ Temp _____ Risk Based (R) and MCL Based (M) for all soil samples. Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier _____										Tracking # 50161232 2713				Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Trip Blank Received: Yes / No HCL / MeOH TBR															
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Temp: A3BXC 0.7+0=0.7 55												If preservation required by Login: Date/Time			
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature)		Date: Time:												Hold: Condition: NCF / OK			



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

October 1, 2021

Jake Janicek
Caerus Oil and Gas LLC
120 North Railroad Ave.
Parachute, CO 81635

RE: J17E

Dear Jake:

Enclosed are the results of the sample submitted to our laboratory on September 24, 2021. For your reference, this analysis has been assigned our service request number P2105035.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 5:52 pm, Oct 01, 2021

Sue Anderson
Project Manager



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Caerus Oil and Gas LLC
Project: J17E

Service Request No: P2105035

CASE NARRATIVE

The samples were received intact under chain of custody on September 24, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Total Petroleum Hydrocarbons as Gasoline Analysis

The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline per modified EPA Method TO-3 using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TPHG_TO3. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph/mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. According to the method, the use of Tedlar bags is considered a method modification. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



2655 Park Center Dr., Suite A
 Simi Valley, CA 93065
 T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946
<p>Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.</p> <p>Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.</p>		

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Caerus Oil and Gas LLC
Project ID: J17E

Service Request: P2105035

Date Received: 9/24/2021
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-3 Modified - TPHG Bag	TO-15 Modified - VOC Bags
20210923-J17E (STACK)	P2105035-001	Air	9/23/2021	13:15	X	X



CHAIN OF CUSTODY

Failure to complete all section of this form may delay analysis.

COC number (for client tracking)

[illegible]

Note: (a) **DW** (Drinking water), **SW** (Surface water), **GW** (Ground water), **WW** (Waste water), **S** (Soil), **SL** (Sludge), **SE** (Sediment) **OS** (Other solid material)

ALS Technichem (HK) Pty Ltd
Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong
Tel: +852 2610 1044 Fax: +852 2610 1044

Client: <u>Caerus Oil and Gas LLC</u>	Work order: <u>P2105035</u>
Project: <u>J17E</u>	
Sample(s) received on: <u>9/23/21</u>	Date opened: <u>9/23/21</u> by: <u>ADAVID</u>

		Yes	No	N/A
1	Were sample containers properly marked with client sample ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Did sample containers arrive in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Were chain-of-custody papers used and filled out?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Did sample container labels and/or tags agree with custody papers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Was sample volume received adequate for analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Are samples within specified holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Was proper temperature (thermal preservation) of cooler at receipt adhered to?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Were custody seals on outside of cooler/Box/Container?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Location of seal(s)? _____ Sealing Lid?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Were signature and date included?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Were seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Do containers have appropriate preservation , according to method/SOP or Client specified information?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Is there a client indication that the submitted samples are pH preserved?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Were VOA vials checked for presence/absence of air bubbles?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Tubes: Are the tubes capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	Badges: Are the badges properly capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Are dual bed badges separated and individually capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

[illegible]

Explain any discrepancies: (include lab sample ID numbers):

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Caerus Oil and Gas LLC

Client Project ID: J17E

ALS Project ID: P2105035

Total Petroleum Hydrocarbons (TPH) as Gasoline

Test Code: EPA TO-3 Modified

Instrument ID: HP 5890 II/GC21/FID

Analyst: Gilbert Gutierrez

Sampling Media: 1.0 L Tedlar Bag(s)

Test Notes:

Date(s) Collected: 9/23/21

Date Received: 9/24/21

Date Analyzed: 9/24/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result mg/m ³	MRL mg/m ³	Result ppmV	MRL ppmV	Data Qualifier
20210923-J17E (STACK)	P2105035-001	0.10	15,000	180	4,200	51	
Method Blank	P210924-MB	1.0	ND	18	ND	5.1	

Parts Per Million results are based on a Molecular Weight of 86.18.

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Caerus Oil and Gas LLC
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: J17E

ALS Project ID: P2105035
 ALS Sample ID: P210924-DLCS

Test Code: EPA TO-3 Modified
Instrument ID: HP 5890 II/GC21/FID
Analyst: Gilbert Gutierrez
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 9/24/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount	Result		% Recovery		ALS	RPD	RPD	Data
	LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance			
	mg/m ³	mg/m ³	mg/m ³	LCS	DLCS	Limits		Limit	Qualifier
TPH as Gasoline	7,190	8,520	8,360	118	116	89-124	2	14	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Caerus Oil and Gas LLC
Client Sample ID: 20210923-J17E (STACK)
Client Project ID: J17E

ALS Project ID: P2105035
 ALS Sample ID: P2105035-001

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Simon Cao
Sample Type: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 9/23/21
Date Received: 9/24/21
Date Analyzed: 9/24/21
Volume(s) Analyzed: 0.00020 Liter(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
71-43-2	Benzene	21,000	2,500	6,600	780	
108-88-3	Toluene	10,000	2,600	2,700	690	
100-41-4	Ethylbenzene	ND	2,600	ND	600	
179601-23-1	m,p-Xylenes	ND	5,500	ND	1,300	
95-47-6	o-Xylene	ND	2,600	ND	600	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Caerus Oil and Gas LLC

Client Sample ID: Method Blank

Client Project ID: J17E

ALS Project ID: P2105035

ALS Sample ID: P210924-MB

Test Code: EPA TO-15 Modified

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 1.0 L Tedlar Bag

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 9/24/21

Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
71-43-2	Benzene	ND	0.50	ND	0.16	
108-88-3	Toluene	ND	0.52	ND	0.14	
100-41-4	Ethylbenzene	ND	0.52	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
95-47-6	o-Xylene	ND	0.52	ND	0.12	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

Client: Caerus Oil and Gas LLC
Client Project ID: J17E

ALS Project ID: P2105035

Test Code: EPA TO-15 / EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Simon Cao
Sample Type: 1.0 L Tedlar Bag(s) / 6.0 L Summa Canister(s)
Test Notes:

Date(s) Collected: 9/7 - 9/23/21
Date(s) Received: 9/15 - 9/24/21
Date(s) Analyzed: 9/24/21

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P210924-MB	107	115	112	70-130	
Lab Control Sample	P210924-LCS	107	112	110	70-130	
20210923-J17E (STACK)	P2105035-001	116	100	106	70-130	
Batch QC	P2104858-001DUP	116	110	110	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Caerus Oil and Gas LLC

Client Sample ID: Lab Control Sample

Client Project ID: J17E

ALS Project ID: P2105035

ALS Sample ID: P210924-LCS

Test Code: EPA TO-15 Modified

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: NA

Analyst: Simon Cao

Date Analyzed: 9/24/21

Sample Type: 1.0 L Tedlar Bag

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS Acceptance Limits	Data Qualifier
71-43-2	Benzene	208	182	88	72-113	
108-88-3	Toluene	206	204	99	70-118	
100-41-4	Ethylbenzene	206	178	86	71-123	
179601-23-1	m,p-Xylenes	416	359	86	67-127	
95-47-6	o-Xylene	208	193	93	69-124	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

Client: Caerus Oil and Gas LLC

Client Sample ID: Batch QC

Client Project ID: J17E

ALS Project ID: P2105035

ALS Sample ID: P2104858-001DUP

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Summa Canister

Test Notes:

Container ID: SC01742

Date Collected: 9/7/21

Date Received: 9/15/21

Date Analyzed: 9/24/21

Volume(s) Analyzed: 0.040 Liter(s)

Initial Pressure (psig): 0.97

Final Pressure (psig): 3.74

Canister Dilution Factor: 1.18

Compound	Sample Result		Duplicate Sample Result		Average µg/m ³	% RPD	RPD Limit	Data Qualifier
	µg/m ³	ppbV	µg/m ³	ppbV				
Benzene	ND	ND	ND	ND	-	-	25	
Toluene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.